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The Use of Academic Regalia at a Land-Grant University: Faculty Attitudes and Beliefs

By Michael W. Everett

Abstract

Each year academic regalia at US universities is a central component associated with the pomp and circumstance of commencement exercises. At one university, faculty of 20 different colleges play a significant role during those same commencement exercises. Currently, the Academic Costume Code, maintained by the American Council on Education, serves as the governing body for academic regalia at universities around the country. Though faculty play a prominent role in the visual presence at commencement exercises, little is known about faculty attitudes and beliefs regarding the use of academic regalia during commencement events. The goal of this research is to better understand the attitudes, beliefs, use, and opinions of current faculty at one Land-Grant university. The theory of planned behaviour provides the theoretical background for this research. This research study used an online instrument to census tenure-system, academic specialists, and fixed-term faculty at Michigan State University. Research objectives included: 1) defining how faculty use academic regalia in the context of commencement exercises; 2) determining the differences among attitudes, subjective norms, perceived behaviours, and opinions about the use of academic regalia; and 3) determining how faculty attitudes, subjective norms, and perceived behaviours determine intentions to use academic regalia in commencement exercises at a Land-Grant university. Results indicated that over 88 percent of faculty respondents positively supported the continued use of academic regalia at commencement events. Descriptive results also suggest a similar trend in attitudes and beliefs about the continued use of academic regalia at commencement exercises. A modified exploratory factor analysis (EFA) indicated observed constructs had a positive direct effect on factor loadings of attitudes and subjective norms, and behavioural control and intent. This research provides support for a continued understanding of attitudes and beliefs about the use of academic regalia; future studies should be conducted at other Land-Grant institutions in the United States.

Introduction

The use of academic regalia is synonymous with commencement exercises which are the culmination of an institution's graduation of its students through technical, undergraduate and advanced degree programmes at Land-Grant institutions.[1] In the US academic re-

I would like to thank Alex Kerr, Jonathan Cooper, Stephen Wolgast, Terry Curry, and Crystal Eustice for their support, dialogue and comments during this research project.

1 Technical degrees are those awarded to students in the Institute for Agricultural Technology in the College of Agriculture and Natural Resources at Michigan State University. Undergraduate degrees are obtained through earning a four-year degree. Advanced degrees include masters', specialist, professional, and doctoral degrees.

galia has been synonymous with the term academic dress.[2] The attitudes and behaviours associated with commencement exercises are often characterized by positive experiences from both the students as participants and their families as observers. However, what is not known is how faculty perceive these same commencement exercises and how faculty attitudes and beliefs may have the potential to inform institutional administrators about the use of academic regalia by faculty at a Land-Grant institution. The use of academic regalia in commencement exercises is based on the Academic Costume Code (ACC), previously known as the 1895 Intercollegiate Code of Academic Costume, which describes the processes and protocol related to the wearing of academic regalia by faculty and students during commencement activities at institutions of higher learning in America.[3] The general guidelines of the ACC are intended to provide a structured protocol regarding the use of academic regalia in America.[4] Currently, faculty at Michigan State University (MSU) wear academic regalia when attending commencement exercises at the conclusion of both fall and spring semesters. At the conclusion of fall semester commencement exercises for all colleges are held at one University-wide event. This is due to the small number of graduates at the conclusion of the first semester of the academic year. At the conclusion of spring semester, commencement exercises are held by individual Colleges as well as on a University-wide level. For defining purposes in this study, faculty respondents who attended commencement events were wearing academic regalia.

The Morrill Act of 1862 created Land-Grant universities to educate students in technical agriculture and the sciences. Formally the Morrill Land-Grant College Act of 1862, it developed these universities by ensuring that each state would have an institution of higher learning that 'produced the country's scientific, technical, and agricultural leaders'.[5] Those institutions were made up of three distinct components, a context for traditional learning,[6] an experimental station that fosters this learning through research and application therein, and a way to disseminate research and instruction as an outreach component of the institution (Extension).[7] Extension is the outreach portion of a Land-Grant institution where personnel work with individuals at a county or local level to disseminate and apply scientific and technical information. One of the significant provisions of the Land-Grant legislation was through inclusiveness associated with the creation of educational opportunities for all students regardless of financial constraints.[8] Subsequent legislation included the Second Morrill Act of 1890, which provided support for the development of seventeen Black Land-Grant institutions many of which are now commonly known as Historically Black Colleges and Universities (HBCUs), and the Morrill Act of 1994, which provided further legislative support for tribal colleges and universities as a way to address cultural equality.[9] Founded to teach students the virtues of scientific and applied scholarship, Land-Grant universities were to be defined as the people's universities.[10]

2 Plank (2003).

3 Academic Costume Code <acenet.edu/news-room/Pages/Academic-Costume-Code.aspx>, [retrieved 12 June 2019].

4 *Ibid.*

5 Marcus (2015), 1.

6 Classrooms, laboratory, and farm facilities where teaching and learning occur.

7 Library of Congress, Thirty-seventh Congress, Session II. Chapter 130. 1862.

8 McDowell (2003), 35.

9 Stein (2017), 6.

10 McDowell (2003), 33.

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In 1855, the Agricultural College of the State of Michigan (later Michigan State University or MSU) was established as an institution of higher learning through the Morrill Land-Grant Act of 1862. Though perhaps not the first, MSU has recognized itself as being the 'Pioneer Land-Grant' institution under the Morrill Land-Grant College Act of 1862.[11]

Theoretical foundation

Theory of planned behaviour

Understanding faculty attitudes, beliefs, and behaviours regarding use of academic regalia in institutions of higher learning is important because of the frequent departures from the Code and the decline in the use of academic regalia outside commencement and occasional convocation events.[12] The theory of planned behaviour (TPB) has been applied in previous research as a way to explain human behaviour.[13] Past attitudes, subjective norms, and perceived behavioural control are significant predictors of intentions, where intentions predict self-reported and socially significant behaviours.[14] By proxy, these socially significant behaviours may hold insight into understanding faculty and assist other Land-Grant institutions in making academic regalia more prominent during campus activities.[15] Due to the similarities in academic programming and faculty educational background (e.g., Agriculture, Forestry, Veterinary Medicine) across Land-Grant institutions, attitudes, beliefs, and behaviours towards academic regalia may provide understanding and application on a larger scale.

The purpose of this study was to model the intentions of Michigan State University faculty based on previous experiences at commencement exercises when faculty used academic regalia. The theory of planned behaviour was used to provide insight into this context for human behaviour.[16] Icek Ajzen wrote the theory of planned behaviour as a way to understand human behaviour aspects as associated with determinants of the TPB in the context of real-world events.[17] Within the theory of planned behaviour, three variables are identified as positive predictors of behavioural intentions: (a) attitude towards the behaviour, (b) subjective norms, and (c) perceived behavioural control. Attitude towards the behaviour is consistent with 'the individual's positive or negative evaluation of performing the behaviour'.[18] Subjective norms include an individual's 'perception of the social pressure placed on a person to perform or not perform the behaviour in question' and where perceived behavioural control is the 'degree of control a person has over internal and external factors that may interfere with the execution of an intended action'.[19] Figure 1 provides a conceptual model for the current research including the adapted TPB for this study.

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11 The Nation's Pioneer Land-Grant University, at <msutoday.msu.edu/feature/2018/land-grant-roots/> [retrieved 25 June 2019].

12 Boven (2009), 156.

13 Armitage and Connor (2001), 471.

14 Fielding, Terry, Masser, and Hogg (2008), 23.

15 Activities may include convocation, commencement exercises, teaching while wearing academic regalia.

16 Ajzen (1985), 11.

17 Ajzen (1985), 12.

18 Ajzen (1985), 12.

19 Ajzen (1985), 35.

The conceptual model includes four thematic variables associated with the theory of planned behaviour including: (a) attitude towards the behaviour, (b) subjective norms, (c) perceived behavioural control, and (d) behavioural intentions.[20]

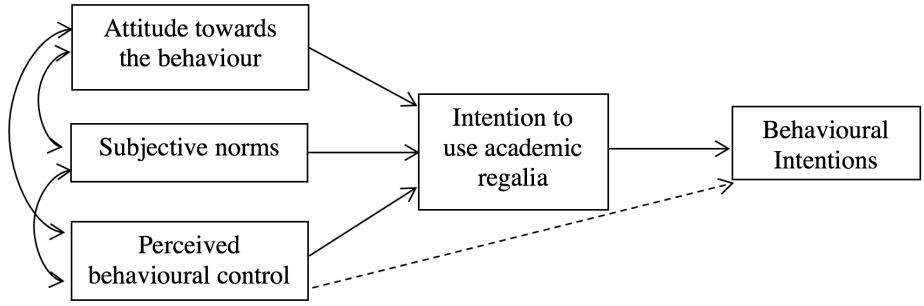

Figure 1. Model of the theory of planned behaviour with the addition of intention to use academic regalia, adapted from Ajzen (1991), 182.

Attitude towards the behaviour

Attitude towards the behaviour, whether positive or negative, plays a unique role in determining behavioural intentions.[21] Though attitudinal behaviour and academic regalia have not been studied, attitude during the task is an indicator of an individual's willingness to perform the behaviour, where positive behaviour is likely to support a faculty member's intentions or participation in commencement or other related activities using academic regalia.[22]

Subjective norms

Opinions regarding certain behaviours related to the use of academic regalia suggest that frequency of use will continue to evolve.[23] Changes in opinions and social pressures by both students and faculty can have dramatic effects over time regarding use of academic regalia.[24] Therefore, opinions and social pressures are crucial in response to the behaviour, hence subjective norms change to meet the goals being considered.

Perceived behavioural control

Individual perceptions about participating in commencement exercises have the potential to increase the likelihood of future participation depending on the perceived difficulty associated with the activity.[25] An individual's perceived ease or difficulty in attending commencement and wearing academic regalia is directly related to the perceived degree of difficulty in performing the described behaviour.[26]

20 Includes intentions to continue to participate in commencement exercises and other activities utilizing academic regalia.

21 Ajzen (2001), 180.

22 Ajzen (2001), 180.

23 Wearden (2015), 24.

24 Wearden (2015), 24.

25 Ajzen (2001), 180.

26 Ajzen (2001), 180.

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Behavioural intentions to wear academic regalia

At the nexus of academic institutions and faculty who provide the core instruction and knowledge development is the pomp and circumstance that celebrate the acquisition of this knowledge through graduation. It must be considered that the celebratory emphasis, historical significance, and minimization of differences among students of Land-Grant institutions provided the impetus for those behavioural intentions. These same behavioural intentions have been suggested as reasons for the decline in the use of academic regalia as well as a rationale for the resurgence in use across academic settings.[27]

Academic regalia use

The use of academic regalia has been studied widely from a historical perspective and social context. Existing academic regalia research suggests that there has been a gradual decline in the everyday use of academic regalia in the context of academic institutions worldwide.[28] Though institutions such as Oxford and Cambridge still require the use of academic regalia in specific instances outside commencement and convocation exercises, use on a more frequent basis is becoming the rare exception rather than a common behavioural practice.

Purpose and research questions

The purpose of this study is to describe faculty attitudes and beliefs towards the use of academic regalia during commencement exercises at a Land-Grant university. The following research questions guided this study:

1. How do faculty at a Land-Grant university use academic regalia in the context of commencement exercises?

2. What are the differences among attitudes, subjective norms, behaviours, intentions, and opinions about the use of academic regalia during commencement exercises and other university-related activities at a Land-Grant institution?

3. Do faculty attitudes, subjective norms, and perceived behaviours determine intentions to use academic regalia in commencement exercises at a Land-Grant university?

Methods

This study used a mixed-methods research approach to determine attitudes, beliefs, use, and opinions about academic regalia among Michigan State University faculty. Faculty at MSU are defined as either tenure-system faculty, academic specialists, or fixed-term faculty.[29]

Population, sample and data collection

The population frame was obtained from the Michigan State University Academic Human Resources administrative unit. The resulting population frame consisted of 5,240 faculty

27 Wearden (2015), 17.

28 Wearden (2015), 20.

29 Tenure-system is defined as those faculty who are assistant, associate and full professors. Academic specialists are defined by five thematic areas. Those thematic areas include advising, curriculum development, outreach, research and teaching specialists. Fixed-term can be defined using the tenure-system or specialist designation. However, fixed-term faculty are employed on one-year contracts by the university and may have faculty rank of assistant, associate or full professor.

members as defined by academic human resources at MSU. Due to the design and goals of the research project, a census of faculty members at MSU was conducted in 2017–18. Instrumentation construction and correspondence with subjects followed Dillman's Tailored Design method.[30] Qualtrics software was used to develop and disseminate surveys to faculty in the population frame.[31] Statistical Package for the Social Sciences (SPSS) was used to conduct descriptive analysis of data, an independent-samples *t*-test, and factor analysis.[32] Analysis of Moment Structures (AMOS) statistical software was used to determine an appropriate structural equation model (SEM) using TPB constructs to develop the modified exploratory factor analysis (EFA).[33] Individual construct means were calculated during the modelling process and utilized to determine appropriate missing values for the SEM analysis.[34] Two social science faculty members and one MSU administrator reviewed the survey for appropriate content and survey structure prior to dissemination to the population. All faculty who participated in the survey provided consent prior to the beginning of the study.

Instrumentation demographics, use of academic regalia and TPB constructs were measured based on attitude towards the behaviour, subjective norms, perceived behavioural control and behavioural intention constructs. Items comprising attitude towards the behaviour, subjective norms, perceived behavioural control constructs, and behavioural intent were measured on seven-point Likert scales ranging from 1 to 7 with responses varying based on constructs.[35] The attitude towards the behaviour construct was comprised of five items related to attitude towards participation in commencement exercises at MSU.[36] See Appendix for construct specific questionnaire items. Items comprising the researcher-adapted, academic regalia use questions included three items in which respondents self-reported acquisition and opinions about commencement related to academic regalia. The first item included current participation in commencement exercises at Michigan State University. The second item asked if academic regalia should be used for more activities other than commencement. Finally, the third item asked faculty if academic regalia should continue to be used at commencement exercises.

Data were collected in December 2017 and January 2018 using an online questionnaire. Faculty were sent an initial email invitation to participate in the survey on 20 December 2017. Eight days later a reminder email was sent to those faculty who had not responded to the first invitation. A final reminder was sent to remaining non-respondents on 9 January 2018. All 5,240 faculty were invited to take the survey with 1,125 respondents providing questionnaire information.[37] The current study is designed to infer findings to the population of MSU faculty; therefore, non-response bias was evaluated by comparing on-time (n = 640) to late responders (n = 485) using an independent-samples t-test to evaluate differences in the variables based on survey completion date.[38] On-time respondents were defined as those faculty who completed the survey before the first reminder for

30 Dillman, Smyth, and Christian (2014).

31 Qualtrics is a web-based survey tool to conduct survey research, evaluations, and other data collection activities, at <qualtrics.com>.

32 IBM SPSS Version 24.0.

33 IBM SPSS Amos Version 24.0.

34 Hair, Hult, Ringle, and Sarstedt (2017), 25.

35 Questionnaire constructs adapted from Ajzen (2013).

36 Instrument questions adapted from Ajzen (2013).

37 (n = 1,125; response rate = 21.5%)

38 Lindner, Murphy, and Briers (2001), 51.

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non-respondents, and late respondents were defined as those faculty who filled out the survey after the first email reminder.[39] The independent-samples t-test analysis revealed no statistically significant differences between the two groups; therefore, non-response bias was not considered a factor in the current study.[40]

Reliability was analyzed using a threshold of reliability as defined in the theory of planned behaviour (0.75 to 0.80).[41] Conservative Cronbach's alpha's (0.60) were utilized as a baseline threshold for reliability estimates.[42] Reliability scale calculations indicated that attitudes towards the behaviour (Cronbach's alpha = .880), subjective norms (Cronbach's alpha = .619), behavioural intentions (Cronbach's alpha = .751), and perceived behavioural control (Cronbach's alpha = .865) constructs were reliable. Additionally, a factor analysis confirmed reliability of all TPB constructs (.905).

Data analysis and findings

Faculty use of academic regalia at a Land-Grant institution

Of the faculty members who responded about their appointment or job status at MSU, 56.3 per cent (n = 470) indicated that they were tenure-system faculty, 22.8 per cent (n = 190) indicated being an academic specialist, and 20.9 per cent (n = 175) indicated being a fixed-term faculty member. (See Fig. 2.)

There are twenty defined colleges at Michigan State University. Faculty were asked to indicate the college of their primary appointment (Table 1).[43] Faculty responses indicated that the Colleges of Agriculture and Natural Resources (18.4 per cent), Social Science (15.3 per cent), and Natural Science (10.6 per cent) made up nearly 45 per cent of all responses for this study.

Of the faculty who participated in this study, 42 per cent indicated that they had purchased the appropriate academic regalia required to participate in commencement exercises (Table 2).[44] Additionally, the next most common responses included borrowing or renting the appropriate academic regalia for commencement exercises.

Faculty who purchased the required components indicated 54 per cent of the time that they did so because it was required for commencement activities. Nearly 14 per cent reported future career pursuits while about 12 per cent indicated reward for their degree as the reason they purchased their academic regalia (Table 3). About 9 percent indicated pride in their institution, whereas about one and a half percent indicated interest in academic regalia as to the reason for purchasing the appropriate components.

Faculty were also asked about ways in which they purchased parts of their academic regalia. Of the faculty who indicated that they purchased certain parts of their academic regalia, nearly 33 per cent indicated that they purchased their hood and rented or borrowed the cap and gown used at commencement. Further, 47 per cent indicated that they purchased their hood and cap while renting or borrowing their gown.[45] Other combinations of

39 The first email was sent to non-respondents on 28 Dec. 2017.

40 Lindner, Murphy, and Briers (2001), 51.

41 Ajzen (2011), 1114.

42 Robinson, Shaver, and Wrightsman (1991), 13.

43 Faculty may have appointments in multiple colleges. However, each faculty member has a primary appointment where their position is located.

44 Appropriate academic regalia is defined as a gown, hood, and cap.

45 When commencement occurs in the fall and spring of each year, rental of the academic

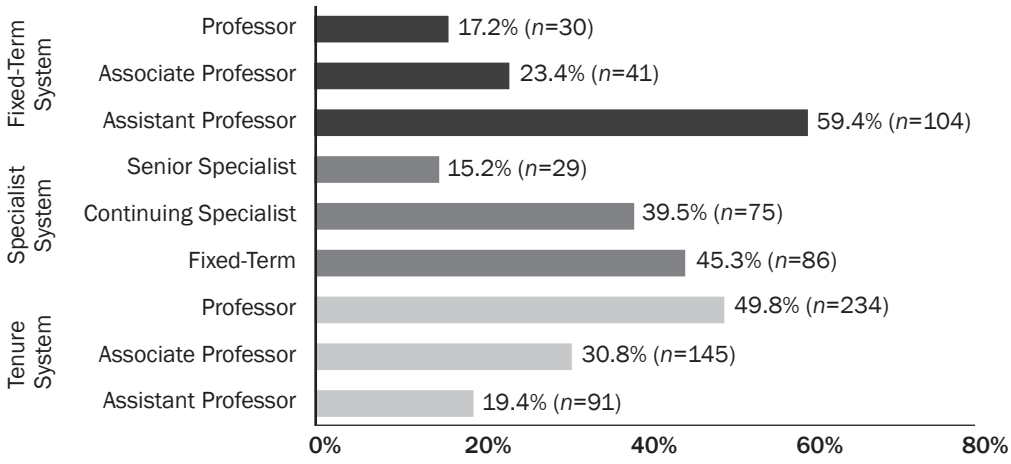

Figure 2. Faculty appointments by position (n = 835).

purchasing, borrowing or renting the hood, cap and gown accounted for 20 per cent of the total respondents to the question (Table 4). Faculty were also asked an open-ended question about purchasing and rental habits. Common themes included the cost associated to renting over time equated to purchasing academic regalia, visibility and pride in degree accomplishments, and supporting students' achievements by creating an *esprit de corps* and equality among all commencement participants.[46]

Of the roughly 9 percent indicating that they received their academic regalia as a gift, only 22 per cent of faculty reported that it was a gift from their institution while nearly 78 per cent indicated that they received their academic regalia as a gift from an individual (Table 5).

Academic regalia: Beliefs, attitudes, and behaviours

Faculty were asked whether they believed that academic regalia should continue to be used at commencement exercises at MSU. More than 88 per cent indicated that academic regalia should continue to be used at commencement events. A small number of faculty who indicated that academic regalia should not be used in commencement exercises cited expense as prohibitive based on the number of activities where academic regalia was used.[47] Further, a small percentage of faculty indicated that the use of academic regalia was elitist and promoted archaic class systems, therefore, were not in favour of obtaining or wearing academic regalia at university activities.

Faculty were also asked whether they believed that academic regalia should be used and worn at other university-related functions. Seventy-four percent of the faculty who participated in this study indicated that academic regalia should not be used at other university-related events.

Respondents were asked about past participation in fall and spring commencement exercises.[48] Of those who responded to this question, 43 per cent indicated that they had

gown is common and would support the high percentage indicated by respondents.

46 Students and faculty.

47 Expense references both purchasing and rental of academic regalia.

48 Michigan State University conducts two commencement sessions during an academic year.

https://newprairiepress.org/burgonsociety/vol18/iss1/4
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Table 1 Faculty respondent primary college appointments (*n*=793)

College	*n*	%
Agriculture and Natural Resources	145	18.3
Arts and Letters	77	9.7
Communication Arts	40	5.0
Education	37	4.7
Business	23	2.9
Engineering	41	5.2
Graduate School	6	0.8
Honors	1	0.1
Human Medicine	67	8.4
International Studies	3	0.4
James Madison	10	1.3
Law	0	0.0
Lyman Briggs [interdisciplinary sciences and humanities]	22	2.8
Music	16	2.0
Natural Science	84	10.6
Nursing	21	2.6
Osteopathic Medicine	42	5.3
Residential College for Arts and Humanities	2	0.3
Social Science	121	15.3
Veterinary Medicine	35	4.4
Total Frequency	**793**	**100.0**

Table 2 Ways faculty acquired academic regalia (*n* = 936)

	n	%
Purchased all required components of academic regalia	395	42.2
Purchased/rented/borrowed certain parts of academic regalia	94	10.0
Borrowed academic regalia	181	19.3
Rented academic regalia	182	19.4
Received all academic regalia as a gift	64	6.8
Received part of academic regalia as a gift	20	2.1
Total Frequency	**936**	**100.0**

Table 3 Why faculty purchased academic regalia (*n* = 489)

	n	%
Required for participation in commencement exercises	264	54.0
Reward for achieving a degree	58	11.9
Pride in institution	45	9.2
Interest in academic regalia	7	1.4
Future career pursuits requiring use of academic regalia	68	13.9
Other	47	9.6
Total Frequency	**489**	**100.0**

Table 4 Academic regalia purchase, rental and borrowing habits of faculty (n = 94)

	n	%
Purchased hood, rented or borrowed cap and gown	31	32.9
Purchased hood and cap, rented or borrowed gown	44	46.8
Purchased cap and gown, rented or borrowed hood	8	8.5
Purchased hood and gown, rented or borrowed cap	3	3.2
Purchased cap, rented or borrowed gown and hood	4	4.3
Purchased gown, rented or borrowed cap and hood	4	4.3
Total Frequency	**94**	**100.0**

Table 5 Academic regalia as a gift to faculty (n = 68)

	n	%
Academic regalia was a gift from an institution	15	22.1
Academic regalia was a gift from an individual	53	77.9
Total Frequency	**68**	**100.0**

participated in both fall and spring commencement exercises. Only six percent reported participation in fall commencement only, whereas 26 per cent indicated participating only in spring commencement exercises. Finally, 25 per cent indicated that they had not participated in either fall or spring commencement exercises.

An independent-samples t-test was performed comparing mean constructs of attitude, subjective norms, behavioural control and intention with faculty respondents' opinions about the use of academic regalia at commencement (Table 6) and use of academic regalia at other university-related activities (Table 7) overall and by individual appointments of faculty members.

Of the faculty opinions about continuing to use academic regalia at commencement exercises, descriptive statistics indicated that all mean values of attitude, subjective norms, behavioural control and intentions were higher than those faculty who did not agree with the continued use of academic regalia at commencement exercises. There was a significant difference in four constructs including all faculty and attitude (M = 4.74, SD = 1.38); $t(672)$ = 9.33, p = .000, academic specialists and behavioural intention (M = 4.26, SD = 2.40); $t(167)$ = 3.08, p = .001, fixed-term faculty and attitude (M = 4.95, SD = 1.45); $t(156)$ = 4.99, p = .000, and fixed-term faculty and behavioural intention (M = 4.55, SD = 2.25); $t(171)$ = 2.67, p = .008.

Of the faculty opinions about the use of academic regalia at other university-related events, descriptive statistics indicated that all mean constructs of attitude, subjective norms, behavioural control, and intentions were higher than those faculty who did not agree with participation in other university-related events using academic regalia. There was a significant difference in two mean constructs including all faculty and behavioural intention (M = 4.97, SD = 2.01); $t(764)$ = 9.40, p = .000, and academic specialists and behavioural intention (M = 5.04, SD = 2.20); $t(167)$ = 4.21, p = .004.

Fall commencement occurs in mid-December and is considered the middle of the academic year. Whereas, spring commencement exercises occur in early May at the conclusion of the academic year. Students who graduate in the summer term are encouraged to participate in spring commencement exercises.

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DOI: 10.4148/2475-7799.1155

Modelling intentions based on attitudes, subjective norms, and behaviours

[*A version of this explanation written for a general audience appears on p. 45.*]

The goal of modelling intentions based on attitudes, subjective norms, and behaviours is to determine which survey items measure above constructs in a way that is valid and reliable with statistically significant relationships between the factors. For the purposes of this study items are modelled to better understand relationships between the factors in an effort to create a model that can be replicated in other settings that measure attitudes, subjective norms, behaviours, and intentions towards the use of academic regalia. In the structural equation modelling (SEM) process, there are four stages including model specification, model estimation, model evaluation, and if appropriate, model modification.[49] Specification is the first step in determining the appropriate model. The number of distinct elements within the structural model was compared to the number of estimated parameters. In the model, the twenty distinct elements were calculated based on TPB constructs, factor loadings, and error terms.[50] The second step includes the model estimation of the covariance matrices within the conceptual framework compared to the covariance matrixes estimated by collected data.[51] Due to minor correlations after the initial factor analysis, an oblique rotation using a direct oblimin factor algorithm was used to rotate factors to a more appropriate position to maximize factor loadings.[52] The factor loading results indicated the need to remove one attitudinal variable (Attitude 5) and one subjective norm variable (Subjective Norm 2) from further modelling processes. Covariance matrixes comparisons were developed using generalized least squares (GLS) estimates and chi-squared analysis, with an accepted model producing no evidence of a statistical difference between collected data and the conceptual framework.[53] Descriptive statistics indicated that faculty respondents' attitudes towards the behaviour (M = 4.45, SD = 1.40) and subjective norms' (M = 4.46, SD = 1.35) constructs were similar while perceived behavioural control (M = 4.39, SD = 1.97) and behavioural intentions' (M = 4.37, SD = 2.12) constructs showed similar consistencies (Table 8).

A factor analysis in SPSS using a GLS approach determined appropriate correlations between TPB constructs.[54] Factor analysis results of the GLS indicated a component correlation matrix value of -0.620 and calculated descriptive statistics.[55] Theory of Planned Behaviour constructs also indicated moderate to strong correlations between values.[56] Values between 0.20 and 0.80 are considered factorable with values above 0.80 indicating the potential for multicollinearity.[57] In combination, with the eleven exogenous

49 Ullman (2013), 663.

50 p[p +1]/2, where p is 10. TPB constructs included the four items measuring attitude towards the behaviour plus one item measuring subjective norms plus two items measuring perceived behavioural control plus two items measuring intentions to participate in commencement exercises exceeded the twenty estimated parameters (i.e., two factor loadings, one latent variable estimate, eight interfactor covariances, and eight error variances), a requirement for structural equation modelling.

51 Ullman (2013), 663.

52 Watson (2017), 233.

53 Ullman (2013), 663.

54 Schreiber, Nora, Stage, Barlow, and King (2006), 327.

55 Generalized Least Square (GLS) results also indicate robust Kaiser-Meyer-Olkin Measure of sampling (0.884) and Bartlett's Test of Sphericity (x^2 = 6129.50 (df = 36) p < .001).

56 Significance of multicollinearity for all constructs and correlations (p < .001, R^2 < 0.795).

57 Watson (2017), 232.

Table 6 Descriptive statistics about the continued use of academic regalia at commencement and mean constructs of attitude, subjective norms, behavioural control and intentions

Variables	Continued use of academic regalia at commencement	*n*	Mean	Standard Deviation	Standard Error Mean
All Faculty	(*n* = 836)				
Attitude	Yes	614	4.74	1.38	0.06
	No	60	3.03	1.15	0.15
Subjective Norms	Yes	638	4.62	1.38	0.05
	No	71	3.50	1.21	0.14
Behavioural Control	Yes	689	4.46	2.03	0.08
	No	79	3.66	1.94	0.22
Behavioural Intention	Yes	685	4.54	2.17	0.08
	No	84	3.17	2.01	0.22
Tenure-system Faculty	(*n* = 459)				
Attitude	Yes	342	4.65	1.30	0.07
	No	36	3.02	1.31	0.22
Subjective Norms	Yes	354	4.58	1.29	0.07
	No	41	3.48	1.24	0.19
Behavioural Control	Yes	380	4.79	1.84	0.09
	No	46	4.28	1.84	0.27
Behavioural Intention	Yes	374	4.66	2.03	0.11
	No	48	3.47	2.10	0.30
Academic Specialists	(*n* = 175)				
Attitude	Yes	123	4.78	1.49	0.13
	No	9	2.89	0.98	0.33
Subjective Norms	Yes	128	4.59	1.43	0.13
	No	12	3.33	1.32	0.38
Behavioural Control	Yes	146	3.80	2.23	0.18
	No	15	2.33	2.02	0.52
Behavioural Intention	Yes	151	4.26	2.40	0.20
	No	18	2.44	1.91	0.45
Fixed-term Faculty	(*n* = 193)				
Attitude	Yes	143	4.95	1.45	0.06
	No	15	3.12	0.85	0.15
Subjective Norms	Yes	250	4.79	1.54	0.05
	No	18	3.69	1.11	0.14
Behavioural Control	Yes	158	4.30	2.13	0.08
	No	18	3.19	1.48	0.22
Behavioural Intention	Yes	155	4.55	2.25	0.08
	No	18	3.08	1.76	0.22

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DOI: 10.4148/2475-7799.1155

Table 7 Descriptive statistics about use of academic regalia at other activities mean constructs of attitudes, subjective norms, behavioural control and intentions

Variables	Use of academic regalia at other activities	*n*	Mean	Standard Deviation	Standard Error Mean
All Faculty	(*n* = 836)				
Attitude	Yes	173	5.16	1.32	0.10
	No	498	4.37	1.44	0.06
Subjective Norms	Yes	178	4.94	1.33	0.10
	No	529	4.35	1.41	0.06
Behavioural Control	Yes	190	4.62	1.97	0.14
	No	576	4.26	2.06	0.09
Behavioural Intention	Yes	191	4.97	2.01	0.15
	No	575	4.15	2.23	0.09
Tenure-system Faculty	(*n* = 459)				
Attitude	Yes	104	5.01	1.28	0.13
	No	271	4.29	1.37	0.08
Subjective Norms	Yes	106	4.84	1.35	0.13
	No	286	4.31	1.30	0.08
Behavioural Control	Yes	116	4.83	1.87	0.17
	No	308	4.68	1.83	0.10
Behavioural Intention	Yes	114	4.99	1.95	0.18
	No	305	4.32	2.10	0.12
Academic Specialists	(*n* = 175)				
Attitude	Yes	30	5.30	1.46	0.27
	No	102	4.39	1.55	0.15
Subjective Norms	Yes	31	5.15	1.27	0.23
	No	110	4.25	1.47	0.14
Behavioural Control	Yes	22	4.23	2.10	0.37
	No	128	3.46	2.26	0.20
Behavioural Intention	Yes	35	5.04	2.20	0.37
	No	134	3.73	2.41	0.21
Fixed-term Faculty	(*n* = 193)				
Attitude	Yes	36	5.48	1.34	0.22
	No	122	4.57	1.50	0.14
Subjective Norms	Yes	38	5.08	1.37	0.22
	No	130	4.53	1.59	0.14
Behavioural Control	Yes	39	4.36	2.13	0.34
	No	137	4.11	2.11	0.18
Behavioural Intention	Yes	40	4.88	2.05	0.32
	No	133	4.22	2.30	0.20

Simplifying structural equation modeling (SEM) using an exploratory factor analysis (EFA)

[*This explanation of modelling intentions is written for a general audience and is based on the text that begins on p. 42.*]

The goal of SEM is to use statistical processes to understand large sets of variables in data. Conducting a confirmatory factor analysis (CFA) or exploratory factor analysis (EFA) reduces data to a smaller set of summary variables when much is either known (CFA) or unknown (EFA) about the model.

The larger data is analysed through a factor analysis process called loading. The loading process analyses all variables to determine relationship to underlying 'factors' (i.e., latent variables) with results reflecting which 'factors' capture a portion of the overall variance in the observed variables. The resulting 'factors' represent specific latent variables in theoretical models (CFA), or a potential alternative model (EFA).

As indicated in the section entitled Modeling Intentions Based on Attitudes, Subjective Norms, and Behaviours, after an initial factor analysis, there is a stepwise process to determine if the data fit a current model such as the Theory of Planned Behaviour using a confirmatory factor analysis (CFA) or if no clear pattern in the initial factor analysis exists, then a more exploratory approach is merited using an EFA. In this study, the EFA process was used and includes application of algorithms (e.g., direct oblimin) and statistical processes (e.g., generalized least square) in an effort to determine if the calculated loads are reasonable indicators of the current model (CFA) or the potential alternative model (EFA).

The SEM process is an excellent approach to support an established model (e.g., Theory of Planned Behaviour) or an opportunity to determine if an alternative model can be supported through the exploratory process. Though the SEM process may seem complex, it is very prescriptive in nature with abundant literature to support an appropriate process to use a factor analysis approach, apply algorithms, calculate statistics and support a current or propose a new model.

variables, the GLS indicated that 77.0 per cent of the total variance could be explained by two load factors. The SEM process and pattern matrix noted the need to reduce the number of variables through calculated load factors including: 1) attitude towards the behaviour and subjective norms, and 2) perceived behavioural control and behavioural intentions (Table). Modifications to the proposed model thereby redefined the analysis as an exploratory factor analysis (EFA).[58] Structural equation modelling in comparison with CFA/EFA techniques fit the conceptual model and collected data were analyzed using the confirmatory fit indexes (CFI), and root mean square error of approximation (RMSEA) with accepted fit indicated by values exceeding 0.95 for CFI and values from 0.06 to 0.08 for RMSEA.[59]

Results of the EFA indicated that modifications created a more robust model and supported a better understanding of attitudes, subjective norms, behavioural control and

58 Schreiber, Nora, Stage, Barlow and King (2006), 330.

59 Schreiber, Nora, Stage, Barlow and King (2006), 330.

https://newprairiepress.org/burgonsociety/vol18/iss1/4
DOI: 10.4148/2475-7799.1155

Table 8 Attitude towards the behaviour, subjective norms, perceived behavioural control, and behavioural intentions toward academic regalia

	Minimum	Maximum	M	SD
Attitude Towards the Behaviour	1.00	7.00	4.45	1.40
Subjective Norms	1.00	7.00	4.46	1.35
Perceived Behavioural Control	1.00	7.00	4.39	1.97
Behavioural Intentions	1.00	7.00	4.37	2.12

Table 9 Standardized and unstandardized coefficients of the exploratory factor analysis

Observed variable*	Latent construct	β	B	SE
Attitude 1	Attitude/Subjective Norm	0.70	0.77	0.03
Attitude 2	Attitude/Subjective Norm	0.84	0.90	0.03
Attitude 3	Attitude/Subjective Norm	0.92	0.94	0.27
Attitude 4	Attitude/Subjective Norm	0.85		
Subjective Norm 1	Attitude/Subjective Norm	0.75	0.78	0.03
Behavioural Control 1	Behaviour	0.63	0.75	0.03
Behavioural Control 2	Behaviour	0.96	1.14	0.03
Behavioural Intention 1	Behaviour	0.90	1.13	0.04
Behavioural Intention 2	Behaviour	0.84		

* Results indicated a CFI = 0.97 and RMSEA = 0.08 for the EFA analysis.

intentions in the context of faculty respondents and their participation using academic regalia during commencement exercises at MSU (Figure 3). Additionally, covariance modification indices on error variables indicated the need to covary four error terms (e_1 to e_2 and e_7 to e_9) as a way to improve the EFA model fit (Figure 3). Standardized residual covariances between observed variables were within tolerable limits based on the large sample size while path loadings between both latent constructs and observed variables were within appropriate ranges based on a minimum value > 0.70.[60] Finally, the strong, positive direct effect between attitudes/subjective norms and behavioural control/intentions based on the observed variables as indicated in Figure 3 supports the use of the observed variables.

Conclusions

The use of academic regalia at commencement exercises in US institutions of higher learning has both historical and ceremonial significance.[61] Land-Grant institutions as defined by the Morrill Land-Grant College Act of 1862 around the US are no different. Two divergent perspectives pervade the use of academic regalia in commencement exercises and other relevant events. The first perspective includes academic regalia as a factor related to equalization of individuals creating an *esprit de corps* at universities while also developing cultural practices, customs and legacies within the academy.[62] The second perspective towards

60 Schreiber, Nora, Stage, Barlow and King (2006), 330. Minimum path loading values recommended by Hair, Black, Babin, and Anderson (2010).

61 Wolgast (2009), 9.

62 Cooper (2010), 29, and Wearden (2015), 25.

the continued use of academic regalia is the belief that these activities separate individuals through elitist views of the academy.[63] Interestingly, qualitative results from this study highlight both perspectives supporting previously conducted research.[64] This research sought to better understand faculty use, opinions, attitudes and behaviours as it relates to commencement exercises and use of academic regalia. This research explored three questions about Land-Grant universities. Research questions included: 1) determining how faculty use of academic regalia at commencement exercises, 2) determining the differences among attitudes, subjective norms, perceived behaviours, and intentions, and opinions about the use of academic regalia during commencement exercises and during other university-related activities, and 3) determining faculty attitudes, subjective norms, and perceived behaviours to use academic regalia in commencement exercises at a Land-Grant university.

Of the faculty who participated in this study, over 50 percent indicated that they owned parts or all of their academic regalia or received their academic regalia as a gift. Furthermore, nearly 75 per cent reported that they had participated in MSU commencement exercises using academic regalia. Of those same respondents, over 88 per cent believed that academic regalia should continue to be a component of commencement exercises at MSU. Conversely, the 12 per cent of respondents not in favour of using academic regalia at commencement exercises indicated elitism, supporting differences among faculty and students, and cost associated with the purchase or rental of academic regalia. Additionally, only 26 per cent of faculty were supportive of wearing academic regalia at more activities on campus. Although these results are consistent with previous research on the ACC,[65] the author believes the positive support by faculty for the use of academic regalia at commencement exercises is indicative of the continued use of academic regalia at one Land-Grant university. Additionally, the approximately 1.5 per cent who indicated interest in academic regalia provides positive support for use and history with opportunities for recruitment of potential members to the Burgon Society and similar organizations. Quantified across American universities and colleges this equates to over 15,000 faculty as potential members for organizations like the Burgon Society.[66]

Descriptive and statistical results between faculty opinions towards commencement and other activities, and mean constructs of attitudes, subjective norms, and behaviours suggest that there is strong support for the continued use of academic regalia at commencement. Furthermore, mean attitude, subjective norms, and behavioural control and intention construct descriptive statistics were higher than those who had contrary opinions regarding the continued use of academic regalia at commencement. These results support the notion that faculty who are supportive of the continued use of academic regalia at commencement also have similarly positive attitudes and behaviours about participating in such events. Conversely, a higher percentage of faculty indicated historical significance and tradition of ceremonial process and pride of receiving academic degrees as important reasons to continue utilizing academic regalia during commencement exercises. Consistent with descriptive statistics related to attitude, subjective norms, and behaviours, anecdotal evidence by faculty supported this positive result.

63 Weardon (2015), 20.
64 Weardon (2015), 20.
65 Boven (2009), 156, and the Academic Costume Code.
66 Eckel and King (2004), 10.

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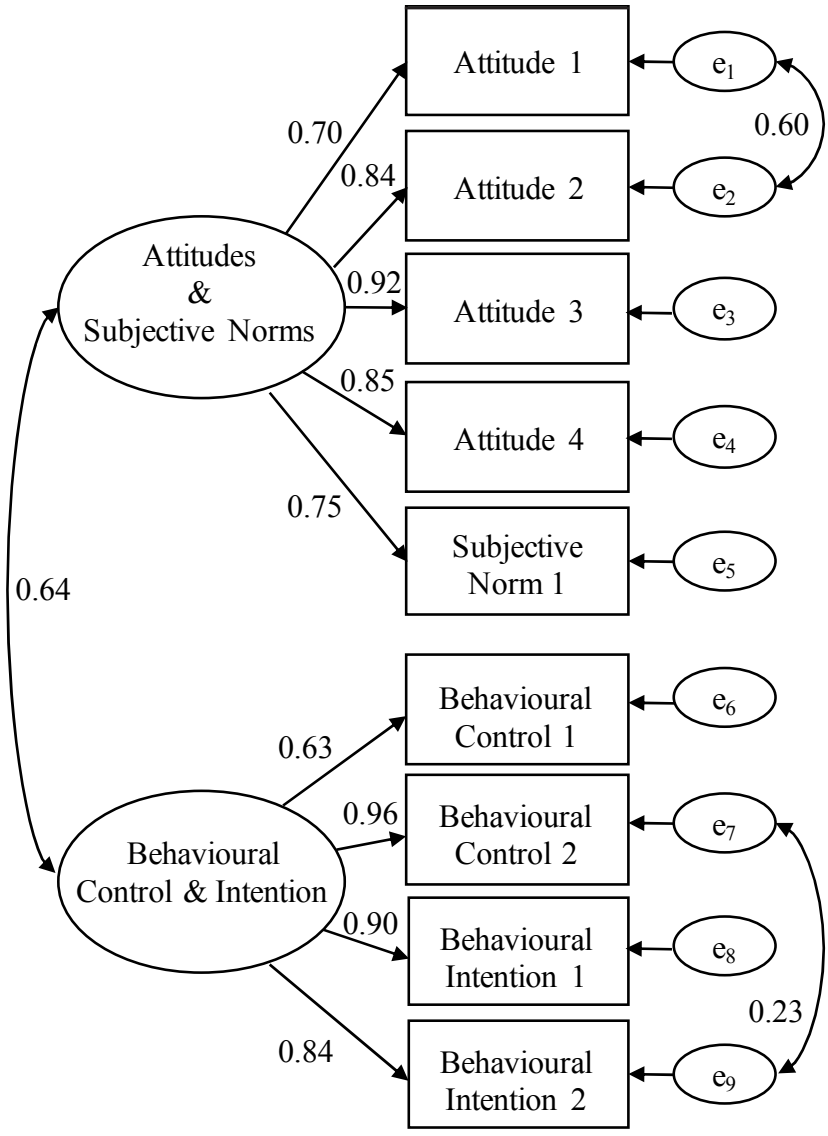

Figure 3. Exploratory factor analysis of attitude, subjective norms, and behavioural control and intentions of Michigan State University faculty toward use of academic regalia at commencement exercises. e = error.

Results also indicated that 74 per cent of faculty were not supportive of participating in additional university-related events if regalia were required. Interestingly, descriptive statistics of mean attitude, subjective norms, and behavioural control and intentions indicated that those faculty who were in support of other university-based events also had higher mean scores than those who believed the contrary about this question. It is important to note that anecdotal evidence suggested that the high expense of academic regalia

may conflict with those who were not in support of participation in commencement activities at MSU. Therefore, ways to offset these costs to faculty may be one way to change attitudes, subjective norms, and behaviours while enhancing participation. It should also be noted that more university-based events that utilize academic regalia would also counter previous comments about the high costs of academic regalia associated with the number of activities attended. As previously indicated, qualitative results also implied that a small number of faculty consider academic regalia as a form of elitist behaviour and archaic system while separating individuals.[67]

Ajzen's theoretical model of the Theory of Planned Behaviour (TPB) provides researchers a framework for application in a social science and behavioural context.[68] However, based on the exploratory factor analysis (EFA), the model for this study provided a new perspective of TBP from an attitude, subjective norms and behavioural perspective towards the use academic regalia at a university commencement event. The data and EFA results suggested that there was a strong positive direct effect between observed attitudes and subjective norms and perceived behavioural control and behavioural intentions. Therefore, use of the observed constructs of the EFA model would assist in better understanding an individuals' attitudes and subjective norms and behavioural controls and intentions that may influence an individual to participate in commencement activities wearing academic regalia.

In addition to the two explanatory variables within the proposed modified model (Figure 4), findings supported the outcome variables as they relate to a faculty member's participation in commencement exercises using academic regalia. Faculty respondents indicated support for the continued use of academic regalia at MSU commencement exercises and the EFA model defined the appropriate observed variables used to measure those attitudes, subjective norms, and behaviours that support the continued use of academic regalia at this Land-Grant institution. Application of the instrument to other Land-Grant institutions throughout the US would be recommended as a way to determine whether the modified EFA model could be validated in the broader context of Land-Grant institutions.

The descriptive statistics and the modified EFA model within the context of the study provided a unique perspective on the theory of planned behaviour (TPB) and constructs associated with attitudes and behaviours towards the use of academic regalia. The instrument proved a reliable framework to better understand attitudes, behaviours, and opinions about use of academic regalia at commencement. Adding to the modified EFA, this model provides an additional perspective towards future research studies. The author believes that the use of academic regalia is important to the Land-Grant institutional process and this research provided strong support by the positive attitudes and behaviours of faculty respondents who hold similar views towards the continued use of academic regalia at commencement activities. The *esprit de corps* aspect of equality that is fundamental to commencement events and the celebratory pomp and circumstance of students graduating from their institution were consistent comments made by faculty respondents. Though opinion towards increasing the number of events that faculty participate in using academic regalia was counter to other results, the overwhelmingly positive response by faculty respondents to continue the required use of academic regalia at commencement events

67 Separation refers to those participating in commencement as differing from individuals who are observing.

68 Ajzen (1985), 3.

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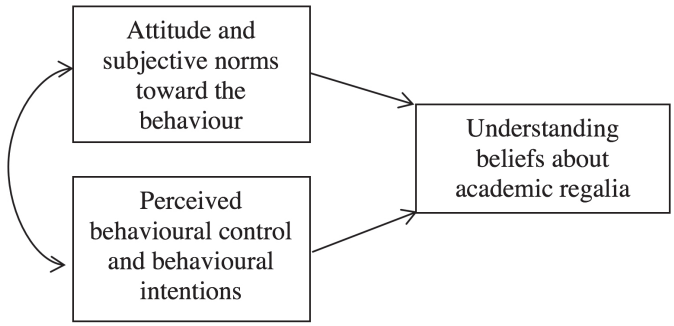

Figure 4. Modified model of the theory of planned behaviour based on an exploratory factor analysis.

and similar attitudes and behaviours was supportive to the overall goal of these research findings. The negative responses by a small number of faculty respondents to the required use of academic regalia outside of commencement exercises is acknowledged and exists throughout the United States with a few notable exceptions.[69]

From an applied perspective, the author recommends that relevant professional organizations support the use of academic regalia by developing materials that promote *esprit de corps* and achievement through positive form and function of academic regalia.[70] Additionally, colleges, universities, and significant supporting organizations should consider development or updating materials that educate spectators, students, and faculty about the definitions and history associated with the use of academic regalia and component requirements associated with academic regalia being used during commencement activities at colleges and universities. From a theoretical perspective, the author encourages further refinement of the modified EFA model through application at other Land-Grant institutions. Given the exploratory nature of this social science research in the context of one university, the author believes that there is an opportunity to better understand faculty and students who participate in various activities using academic regalia.[71] Continuing to understand attitudes and beliefs while educating about the importance and use of academic regalia may be one way to increase the use of academic regalia, and as Ajzen suggests, 'by attacking accessible beliefs of individuals, one can begin to introduce new beliefs.'[72]

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69 Wearden (2015), 20.

70 Organizations may include other colleges and universities worldwide, the Academic Costume Code and the Burgon Society.

71 The author notes that this model is from the perspective of one Land-Grant institution and caution should be used when generalizing the results across other institutions.

72 Ajzen (1985), 3.

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Appendix

Attitude, behaviour, and subjective norms instrument questions and scales.

Construct	Question	Scale (1 to 7)
Attitude 1	For me to attend commencement exercises personally is ...	Very Unsatisfying to Very Satisfying
Attitude 2	For me to attend commencement on a regular basis is ...	Extremely Unpleasant to Extremely Pleasant
Attitude 3	For me to attend commencement on a regular basis is ...	Not possible to Very Possible
Attitude 4	For me to attend commencement on a regular basis is ...	Boring to Interesting
Attitude 5	For me to attend commencement on a regular basis is ...	Extremely Difficult to Extremely Easy
Subjective Norm 1	For me to attend commencement on a regular basis is ...	Extremely Inconvenient to Extremely Convenient
Subjective Norm 2	Most people whose opinions I value would approve of my attending commencement on a regular basis ...	Strongly Disagree to Strongly Agree
Behavioural Control 1	It is expected of me that I attend commencement on a regular basis ...	Definitely False to Definitely True
Behavioural Control 2	I will make every effort to attend commencement exercises this academic year ...	I Definitely Will Not to I Definitely Will
Behavioural Intention 1	I plan to attend commencement this academic year ...	Extremely Unlikely to Extremely Likely
Behavioural Intention 2	I intend to attend commencement on a regular basis ...	Strongly Disagree to Strongly Agree