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ORIGINAL ARTICLE

Relationship between satisfaction of work-related needs and forms of motivation for the pursuit of scholarly activity by chiropractic faculty

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ABSTRACT

Objective: This study sought to determine whether chiropractic faculty were extrinsically, introjectedly, or intrinsically motivated to pursue scholarship; if satisfaction of a faculty member's work-related needs of autonomy, competence, and relatedness correlated with intrinsic motivation to pursue scholarly activities; and to identify barriers to faculty participation in scholarship.

Methods: An anonymous online survey was administered to full-time faculty at 2 chiropractic institutions in the United States. Survey items assessed whether faculty perceived their work-related needs as met, which motivation type they displayed, and perceived barriers to performing scholarly work. Pearson correlation was used to measure the relationships between satisfaction of the work-related needs and intrinsic motivation. Content analysis was used to analyze faculty responses regarding perceived barriers.

Results: On average, survey items indicating extrinsic motivation received 52.2% of positive responses, those indicating intrinsic motivation received 47.8% of positive responses, and those indicating introjected motivation received 26.7%. Intrinsic motivation was positively correlated with each of the work-related needs (autonomy: $r = .34$, $p = .067$; competence: $r = .52$, $p = .004$; relatedness: $r = 0.34$, $p = .063$). Four categories of barriers were reported: time constraints, lack of knowledge, lack of support, and lack of interest.

Conclusion: In this sample, chiropractic faculty most frequently identified with survey items indicating extrinsic motivation. Satisfaction of each of the 3 work-related needs was positively correlated with intrinsic motivation; however, competence showed a significant correlation indicating as competence is satisfied faculty are more likely to be intrinsically motivated to pursue scholarship. Perceived lack of time, knowledge, and support were reported barriers to the pursuit of scholarship.

Key Indexing Terms: Chiropractic; Faculty; Motivation; Research

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INTRODUCTION

Over the past several years, the emphasis on the production of scholarly work by chiropractic faculty has been steadily increasing.[1,2] Motivation to pursue scholarly activity by chiropractic faculty has been minimally studied. To date, the majority of motivation research on faculty across disciplines has focused on faculty development not pursuit of scholarship.[3] It has been postulated that the dearth of faculty motivation research overall may be attributed to the assumption that due to the arduous nature of achieving and maintaining faculty status, faculty members must possess high levels of motivation.[3]

Self-determination theory (SDT), proposed in 1985 by Dr. Edward Deci and Dr. Richard Ryan,[4] first focused on intrinsic motivation to understand why humans work to learn and solve problems. Continued research into human behavior allowed SDT to expand to become a more generalized theory of personality development and human motivation that includes intrinsic as well as extrinsic motivation. Motivation describes why humans behave a particular way in a certain social context. SDT differentiates distinct types of motivation by the underlying factors that drive each. These types of motivation include intrinsic, introjected, and extrinsic.[4] Intrinsic motivation arises from internal feelings of enjoyment and satisfaction gained from a behavior and is considered the most autonomous form of motivation.[5,6] Avoidance of feelings of guilt or shame, or to maintain self-esteem or pride is the root of introjected motivation.[7] Lastly, extrinsic motivation, the least

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autonomous form, is regulated by external factors such as obtaining rewards or avoiding punishment.[7] According to SDT, the type of motivation is more significant for predicting an outcome of behavior than the strength of the motivation.[8,9] SDT also identifies 2 additional forms of motivation: integrated and identified motivation. Integrated motivation prompts behaviors that align with an individual's values and identified motivation underlies behaviors an individual deems to be important.[6] Due to their similarity with intrinsic motivation, this study did not include these forms.

As SDT evolved, it included the concept of basic psychological needs underpinning motivation. The basic psychological needs that must be met as described by SDT theory are the need for autonomy, the need for competence, and the need for relatedness. Autonomy is the need to self-regulate one's experiences and actions, the need to have a sense of choice as to how one behaves. Competence is described as the need to be challenged beyond one's current capacity and to operate effectively within one's own environment. The final need of relatedness speaks to the need to feel cared for by others and to form emotional bonds with other humans.[5,6] The context varies for evaluation of autonomy, competence, and relatedness; these can be measured in personal setting of friends and family, or in a professional context of work-related basic psychological needs. As these needs are satisfied a human becomes more likely to experience intrinsic motivation. In the absence of these needs being met, a person is more likely to behave in ways that are driven by external forces, that is extrinsic motivation.[5] Introjected motivation falls within the continuum of intrinsic and extrinsic motivation as it is driven by internalized external pressures such as feelings of obligation and avoidance of guilt. Because introjected motivation contains aspects of both intrinsic and extrinsic motivation, fulfillment of the work-related basic needs is variable.[5]

The conceptual model of SDT has been used to study faculty members' motivation for teaching and research success. One study followed 105 pre-tenure faculty members at 2 large research universities. In this study research success was mediated by a balance between autonomy and competence.[10] Additionally, a large study of over 2000 German professors found that competence was the factor most impacting teaching motivation.[11] Moreover, it has been identified that faculty display various forms of motivation for teaching.[6,10] Previous research has identified that faculty may exhibit less optimal forms of motivation such as external and introjected motivation.[12] Therefore, investigating faculty motivation is useful and important because identification of motivators and barriers to faculty participation in scholarship can allow for targeted faculty development and research support. The goals of the current work were to determine: 1) what types of motivation are present in chiropractic faculty to perform scholarly work; 2) which work-related basic psychological needs are important in the motivation of chiropractic faculty to pursue scholarly activity and; 3) what perceived barriers exist to performing scholarly activities.

METHODS

Participants

Faculty that taught in a full-time capacity within chiropractic programs at the University of Western States and the Southern California University of Health Sciences ($n = 71$) were provided a link to an electronic survey. This study was deemed exempt by the University of Western States institutional review board (OIRG 0001188).

Survey Instrument

The survey was adapted from the validated instrument utilized by Stupnisky et al.[10] Minor modifications were made to the original survey questions to direct respondents to reflect on scholarship only. For example, the original survey question "In my teaching, I feel a sense of choice and freedom." was changed to "In my scholarship activities, I feel a sense of choice and freedom." The survey was a mixed methods design composed of 4 questions: 2 Likert-style questions with multiple components and 2 open-ended questions. Question 1 asked "In terms of engaging in scholarly activities, please indicate how true each of the following statements is for you." and was measured on a 5-point Likert scale (1 = strongly disagree, 2 = slightly disagree, 3 = neither agree or disagree, 4 = slightly agree, 5 = strongly agree). Question 2 asked "Please indicate the extent to which each of the following statements correspond with WHY you do or might engage in scholarly activities." and was measured on a 7-point Likert scale (1 = does not correspond at all, 2, 3, 4 = neutral, 5, 6, 7 = corresponds completely). Question 3 asked "Please list any specific barrier(s) that hinder your ability to engage in scholarship. And lastly, question 4 asked "Please list the specific forms of scholarly activities that you currently, have previously, or plan to engage in."

Data Collection

The anonymous, online survey was constructed and administered using Qualtrics (Provo, UT, USA). No inducements were offered; participation was voluntary. The survey was available for 4 weeks in summer of 2023 and a reminder email was sent during week 2 to encourage participation. Participants were not required to respond to all survey items to complete the survey. The survey items did not reveal which basic need or motivation type was being assessed. Faculty responses were not separated by institution.

Quantitative Data Analysis

Pearson correlation was conducted using IBM SPSS statistical software, version 23 (IBM Corp, Armonk, NY) to measure the relationships between satisfaction of the work-related basic psychological needs and intrinsic motivation. Each work-related basic psychological need (autonomy, competence, or relatedness) was correlated with each form of motivation.

Qualitative Data Analysis

Content analysis was used to analyze faculty responses to the 2 open-ended questions regarding perceived barriers to performing scholarship and specific forms of scholarly activities faculty had been, were currently, or were planning to engage in. This analysis involved coding responses to identify labels, then grouping labeled responses into larger categories, which were then placed in overall themes. This process has been described in detail in previous publications.[13,14]

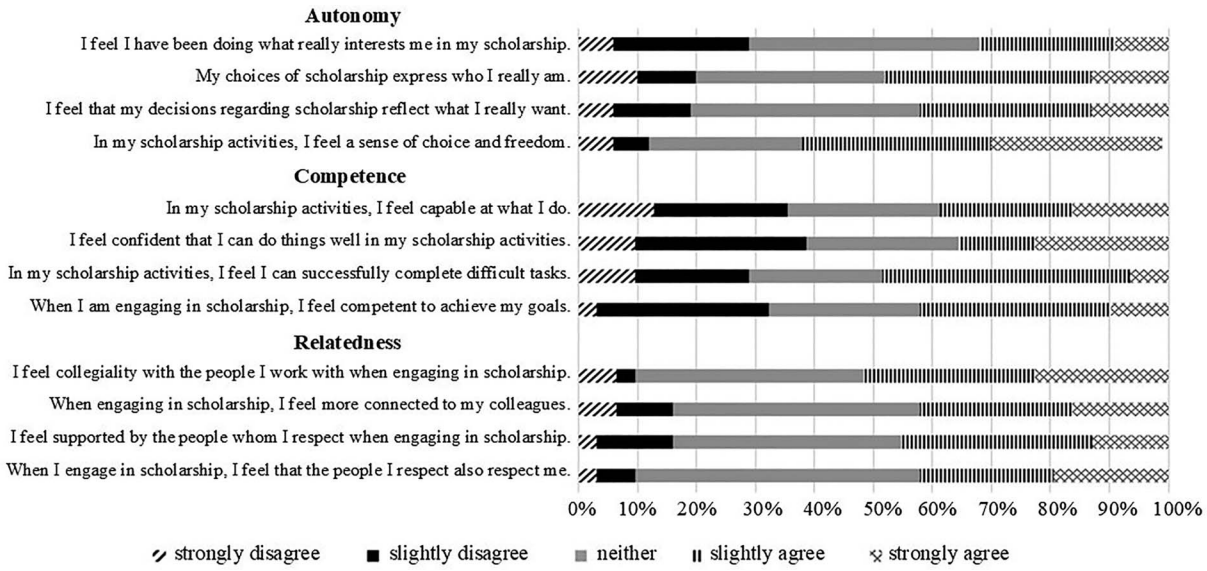

Figure 1 - Responses to work-related basic psychological needs questions.

RESULTS

Survey Results

The response rate for the survey was 42.2% (30/71). The results of question 1, "In terms of engaging in scholarly activities, please indicate how true each of the following statements is for you." contained statements that measured the 3 work-related basic psychological needs of autonomy, competence, and relatedness. The psychological need categories were not exposed to the respondents; they answered each question individually without knowledge of categorization. Within the statements associated with the work-related basic psychological need of autonomy, only the statement "In my scholarship activities, I feel a sense of choice and freedom" showed over half of respondents (61%) selecting the positive, "slightly agree" or "strongly agree," choices. The statement that received the largest percentage of positive responses within the relatedness category was "I feel collegiality with the people I work with when engaging in scholarship" (52%). Within competence, the statement "in my scholarship activities, I feel I can successfully complete difficult tasks" is the only statement that approached 50% of respondents indicating positive agreement (48%). The work-related basic psychological need of competence showed the lowest percentage of positive agreements compared to autonomy and relatedness, with relatedness showing the highest percentage (Fig. 1).

The results of question 2, "Please indicate the extent to which each of the following statements correspond with WHY you do or might engage in scholarly activities." contained statements that measured motivation. The statements are grouped by type of motivation, but again the survey did not expose these groups to the respondents. Each respondent replied to the statements without knowledge of what type of motivation was being measured. Collapsing the positive Likert categories of 5, 6, and 7, where 7 represented complete agreement with the statement, created a summary of types of motivators most often agreed with by respondents (Table 1). Positive responses to statements indicating extrinsic motivation were selected at an average rate of 52.2%, positive responses to statements indicating intrinsic motivation were selected at an average rate 47.8%, while positive responses to statements indicating introjected motivation were selected at an average rate of 26.7%. Overall, the statement that garnered the highest percentage of positive responses was "because my institution demands that I engage in scholarly activities." This statement indicated extrinsic motivation.

Quantitative Data

Pearson correlation coefficients were computed to determine the relationship between each of the work-related basic psychological needs: autonomy, competence, and relatedness and each of the types of motivation, extrinsic, intrinsic, and introjected (Table 2). The significance threshold was set at $p \leq .05$. Intrinsic motivation was positively correlated with each of the work-related needs (autonomy: $r = 0.34$, $p = .0673$; competence: $r = 0.52$, $p = .0036$; relatedness: $r = 0.34$, $p = .0633$); however, only competence was significantly correlated with intrinsic motivation.

Qualitative Data

Twenty-three responses were received to the open-ended question "Please list any specific barrier(s) that hinder your ability to engage in scholarship." Two overarching themes were identified: *institutional barriers* and *perceived personal barriers.* Some responses contained elements of each theme and were coded accordingly. Within each theme, specific categories were coded. The theme *institutional barriers* contained categories of *insufficient time* ($n = 11$) and *insufficient training/support* ($n = 7$). For example, the response *". . .lack of research support from the school. . .*" was coded into the theme of *institutional barriers* and categorized as *insufficient training/support*. Categories within *perceived personal barriers* included *lack of knowledge* ($n = 8$) and *lack of interest* ($n = 3$). The response *"Lack of confidence in my ideas and the process in*

Table 1 - Responses to Motivation Questions

	1		2		3		4		5		6		7	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Intrinsic Motivation														
..it is pleasant to carry out scholarly activities	2	7	8	27	1	3	9	30	6	20	2	7	2	7
..I like engaging in scholarly activities	2	7	6	20	2	7	5	17	5	17	6	20	4	13
..I find scholarly activities interesting to engage in	1	3	5	17	4	13	2	7	6	20	6	20	6	20
Introjected Motivation														
..if I don't engage in scholarly activities I will feel bad	5	17	6	20	4	13	8	27	6	20	1	3	0	0
..I would feel guilty if I did not engage in scholarly activities.	5	17	4	13	6	20	6	20	8	27	1	3	4	13
.. I do not want to feel bad if I do not engage in scholarly activities.	4	13	5	17	8	27	5	17	5	17	3	10	0	0
Extrinsic														
..my institution obliges me to engage in scholarly activities	0	0	3	10	3	10	4	13	7	23	9	30	4	13
..I am paid to engage in scholarly activities	7	23	5	17	3	10	10	33	3	10	1	3	1	3
..my institution demands that I engage in scholarly activities	2	7	1	3	1	3	4	13	11	37	7	23	4	13

Note: Column headings 1-7 indicate Likert scale (1 = does not correspond at all, 2, 3, 4 = neutral, 5, 6, 7 = corresponds completely).

general." was coded into the theme of *perceived personal barriers* and categorized as *lack of knowledge*.

The final question on the survey "Please list the specific forms of scholarly activities that you currently, have previously, or plan to engage in" received a wide range of responses ($n = 23$). More than 1 theme and/or category often appeared in a single response and was therefore included in those theme/category response counts. The 2 major response themes were *peer-reviewed* and *non-peer-reviewed*. The peer-reviewed theme encompassed the categories of *clinically oriented studies* ($n = 10$), *published journal articles* ($n = 9$), *education-related studies* ($n = 7$), *conference presentations* ($n = 7$), and *serving as a peer reviewer for journals/conferences* ($n = 3$). Categories within the non-peer-reviewed theme included *internal presentations and workshops* ($n = 2$), *earning an advanced degree/certification* ($n = 2$), *conference attendance/networking* ($n = 1$), and *updating course materials* ($n = 1$).

DISCUSSION

Faculty in higher education are the major source of support and development of students. In chiropractic education, faculty serve as role models for chiropractic students and impart knowledge to them about everything from basic science to patient care. In addition, there is a growing expectation to contribute scholarship to bolster the limited amount of research in chiropractic education and chiropractic science.[15] To contribute, faculty must be motivated to pursue scholarly activities as well as have the resources necessary to do so.

This study investigated what work-related psychological needs are being met in the faculty respondents and how those needs are related to motivation. SDT theory has established that when these 3 needs are met, a person is more likely to be intrinsically motivated.[6] In this study all 3 work-related psychological needs were positively correlated with intrinsic motivation, yet only 1, competence was significantly associated with intrinsic motivation. This suggests that as competence is satisfied, faculty tend to become more intrinsically motivated. The positive correlation between autonomy and relatedness was not strong, suggesting that meeting either of these needs results in a small move towards intrinsic motivation in this limited population of respondents. The need to feel competent to explore scholarly pursuits seems to be most important in this population. Additionally, this population identified insufficient training/support as a barrier to engaging in scholarship. This suggests that if faculty are provided with appropriate training and education to increase their competence, they will likely be more intrinsically motivated to pursue scholarship. The relationship between feeling proficient in conducting scholarly activities is consistent with a growing curiosity about scholarship. Curiosity is a component of intrinsic motivation, so

Table 2 - Correlation Matrix of Relationship Between Motivation Type and Satisfaction of Work-related Basic Psychological Needs

	Autonomy	Competence	Relatedness	Intrinsic	Introjected	Extrinsic
Autonomy	1.00					
Competence	0.76	1.00				
Relatedness	0.80	0.68	1.00			
Intrinsic	0.34	0.52*	0.34	1.00		
Introjected	0.04	−0.16	0.13	−0.12	1.00	
Extrinsic	0.02	−0.04	0.05	−0.18	0.46	1.00

* indicates $p < .05$ (2-tailed); $n = 31$.

if faculty feel competent it may also increase curiosity, which in turn may drive an inherent interest in scholarship.[6]

Faculty self-identified primarily with extrinsic motivation statements in this study (52.2%). This suggests that the participants in this study are motivated by receiving external rewards and/or the avoidance of negative consequences such as denial of rank promotion. In other faculty populations it has been shown that meeting the needs of autonomy and relatedness may encourage faculty to perform scholarly work for intrinsic reasons, such as: because they find it interesting or satisfying.[10,11,16] Clear messaging from leadership about faculty members' freedom to pursue research topics and forms of scholarship may bolster a sense of autonomy in faculty. Development of faculty learning communities such as communities of research practice that allow faculty to collaborate and exchange ideas can foster a sense of relatedness.[17] Although, interventions to support the work-related basic psychological needs of faculty have been shown to be more effective if they occur at the institutional level rather than at the peer-to-peer level.[16]

The barriers to performing scholarship identified in this study are consistent with the results from a recent scoping study that found that a culture of scholarship must be established where scholarship is incentivized, valued, and awarded.[15] The current study similarly found that lack of time and support were noted as barriers. These barriers could be overcome through institutional changes that promote a culture of scholarship, such as providing release time and training. The perceived personal barriers of lack of interest and lack of knowledge could also be ameliorated by a change in culture that fulfills the work-related basic psychological need of competence.

Limitations

The response rate for this study was 42.2%, which while not exceptionally low, is less than ideal. With only a total of 71 full-time faculty members surveyed, an acceptable response rate of 42.2% still results in a small number of respondents. Faculty from only 2 institutions were included in this study, which limited the diversity of faculty members. Further, the respondents voluntarily participated (ie, convenience sampling), potentially limiting the generalizability of the results of this motivation study to the larger population that included those not motivated to complete the survey. Demographic information was not collected. Historically surveys of chiropractic faculty often garner a low response rate so conclusions based on sex, gender, or age would not likely be valid. The survey could be completed without responding to all items, potentially decreasing the number of responses to each question.

CONCLUSION

Within this sample of chiropractic faculty identified with extrinsic factors as motivators to perform scholarly activities more often than intrinsic factors. Although autonomy, relatedness, and competence were correlated with intrinsic motivation, the work-related psychological need of competence was significantly correlated with intrinsic motivation. This indicates that feeling proficient and adept at scholarship is most related to performing scholarly activity for this group of faculty. Faculty members reported that lack of time and training represent the most significant barriers to engaging in scholarly activities.

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Author Contributions

Concept development: CM, KB, MN, KR, SV. Design: CM, KB, MN, KR, SV. Supervision: KB, CM. Data collection/processing: CM, KB, MN, KR, SV. Analysis/interpretation: KB, CM, SV. Literature search: KB, CM. Writing: KB, CM. Critical review: CM, KB, MN, KR, SV.

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