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Sunyoung Park

Louisiana State University, sunypark@gmail.com

Petra Robinson

Louisiana State University, petrar@lsu.edu

Reid Bates

Louisiana State University, rabates@lsu.edu

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Adult Learning Principles and Processes and Their Relationships with Learner Satisfaction: Validation of the Andragogy in Practice Inventory (API) in the Jordanian Context

Sunyoung Park, Petra A Robinson, and Reid Bates
Louisiana State University

Abstract: This study aimed to assess the validity of the Andragogy in Practice Inventory (API) and to examine the relationships among adult learning principles and processes and learner satisfaction in Jordan. The results indicated that the API is a valid instrument and its components and learner satisfaction are positively related.

Keywords: Andragogy in Practice Inventory (API), adult learning, andragogy, learner satisfaction

Problem Statements and Purpose

The Andragogy in Practice Inventory (API) was developed to assess the extent to which adult learners perceive that the learning activities they engage in are consistent with the principles and process design elements framed within the tenets of andragogy (Holton, Wilson, & Bates, 2009). After introducing API to academia, several studies have used it to examine the features of adult learners and their relationships with the principles and design elements of andragogy in the United States (Cannonier, 2014; Leigh, Whitted, & Hamilton, 2015; Watts, 2015).

However, little research has been conducted to investigate the applicability of API in an international context. Organizations in the Middle East, particularly, Jordanian organizations have relied profoundly on training and development to improve employees' job performance (Khasawneh, Bates, & Holton, 2006). It is very important for Jordanian practitioners to understand the characteristics of employees as adult learners and develop the best instructional methods for them. Additionally, it is significant to use appropriate measures to evaluate how much andragogy principles and design elements have applied to adult learning practice. Further, adult learners' satisfaction can increase when learning process and environments meet their expectations. Therefore, the purpose of this study is to assess the validity and applicability of the Andragogy in Practice Inventory (API) and to examine the relationships among adult learning principles and processes and learner satisfaction in the Jordanian context.

Theoretical Framework: Andragogy

Andragogy has provided a fundamental framework for adult learning and education (Holton et al., 2009; Knowles, 1990; Knowles, Holton, & Swanson, 1998; Pratt, 1998). Scholars have described and defined andragogy in many ways (e.g., Beder & Carrea, 1988; Feuer & Gerber, 1988; Merriam & Brockett, 1997; Rachal, 2002). For instance, andragogy is viewed as a "guiding principle on how best to educate adults" (Beder & Carrea, 1988, p. 75) and "a way of thinking about working with adult learners" (Merriam & Brockett, 1997, p. 135).

Knowles (1984, 1989) defined six basic principles and eight design elements of andragogy. To successfully teach adult learners, the six basic principles shift the focus of learning from being teacher-centered to learner-centered. These principles include self-directed learning, prior experience, readiness to learn, orientation to learning, reason for learning, and intrinsic

motivation to learn (Knowles, 1989). The eight design elements of andragogy encompass a wide range of activities which occur before, during, and after the learning experience, including: preparing the learners, climate setting, mutual planning, diagnosis of learning needs, formulation of learning objectives, learning plan design, learning plan execution, and evaluation (Knowles, 1984). Table 1 and 2 summarize the principles and processes of andragogy

Table 1. *Principles of Andragogy*

Intrinsic motivation to learn	The learning that has the most meaning for adults is that which has personal value.
Readiness to learn	Teaching and learning efforts are most effective with adults who are prepared by life or work challenges to engage in new learning (i.e., learning that helps them solve problems or issues they recognize in their lives/work).
Prior experience	Current and past experience is seen as a rich resource for learning by self and others
Orientation to learning	Adults prefer problem-solving approach, not a subject-centered approach to learning and learn best when new learning is couched in real-life context.
Self-directed learning	Adults learn best when they have the opportunity to control or have input into the goals and purposes of a learning experience and have some personal autonomy in making decisions in how teaching and learning occurs.
Need to know	Adults need advance information about training or learning experiences in order to evaluate its relevance. This could also include some advance involvement in designing and planning training.

Table 2.

Learning Process Design Elements for Adult Learners

Preparing the learner	Before the learning experience supply learners with advance information about the content and style of the learning experience, prepare them for participation, and assist in the development develop realistic expectations.
Climate setting	Establish a trusting, mutually respectful, informal, collaborative, and supportive learning climate.
Mutual planning	Implement a collaborative approach to the planning of the learning experience by engaging learners in planning their learning experience.
Diagnosis of learning needs	Learning needs are diagnosed through a process of mutual assessment.
Set learning objectives	Learning objectives are defined through a process of mutual negotiation between the instructor and the adult learners.
Design of the learning experience	Learning plans are most effective when oriented around learning contracts, projects and sequenced by readiness.
Learning activities	The most effective activities include inquiry projects, independent study, and the use of experiential techniques.

Evaluation of learning	Learning evaluation is most effective when done through the collection of learner collected evidence that is criterion-referenced and validated by peers or experts.
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When andragogical principles and design elements are adequately considered, andragogy is able to address learning needs of adults and enhance the practice of adult education by using appropriate instructional methods (Brookfield, 1986).

Research Design

The main research question for this study, Is the Andragogy in Practice Inventory (API) an appropriate measure of adult learning principles in Jordan? Both explorative factor analysis (EFA) and confirmatory factor analysis (CFA) were used to explore underlying factors and to confirm hypothesized factors in the current study.

The subjects of this study were adult learners who are 18 years and over, enrolled in a higher education institute in Jordan. Data were collected via the questionnaire with 70 items. The measure was API developed by Holton and colleagues (2009), consisting of two sections (the principles of andragogy and the learning process design elements for adult learners). Items were prepared for use in Jordan through appropriate translation procedures. The questionnaire implemented a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Findings

A total of 305 responses were analyzed, excluding six incomplete responses. There was a slightly higher number of females (160 responses, 52.5%) than males (145 responses, 47.5%). Most responses were from 18-21 year olds (62.3%, 190 responses) and people who were 22-25 years old provided 29.2 % (89 responses). The reliability of API was .82. Reliability for each section was .74 (Principle) and .85 (Design).

The result of EFA indicated the API has six dimensions in the principle (self-directed learning, prior experience, readiness to learn, orientation to learning, reason for learning, and motivation) and six dimensions in the design elements (preparing the learners, diagnosis of learning needs, formulation of learning objectives, diagnosis of learning experience, learning activities, and evaluation). EFA was performed using a varimax rotation approach. Items that were either substantially cross-loaded or that exhibited low loadings of .50 or less were excluded. All well-defined factor-loading values in EFA were over .52 (the principle: .52 to .92; and the design: .62 to .85, respectively).

As a result of CFA, all fitness indices of the measurement model seemed acceptable. In the principles section, all model-fit indices were found to be significant to support well-designed measurement ($\chi^2 = 52.33$; $df = 39$; $\chi^2 / df = 1.34$; $TLI = .96$; $CFI = .98$; $RMSEA = .03$). In the design elements section, all model-fit indices were moderately acceptable ($\chi^2 = 151.94$; $df = 39$; $\chi^2 / df = 3.89$; $TLI = .90$; $CFI = .95$; $RMSEA = .09$). All factor-loading values of the items in CFA were acceptable, ranging from .68 to .92. The results indicated the adequate validity of all the factors. In other words, API is a valid instrument to measure the principles and design elements for adult learning in the Jordanian context.

In addition, adult learning principles and processes and learner satisfaction were significantly related. The correlations result indicated that the principles of andragogy (self-directed learning, prior experience, orientation to learning, reason for learning, and motivation) were positively related to learner satisfaction with the instructor. Self-directness of adult learning

also was related to satisfaction with the course structure. The design elements for adult learners (preparing the learner, diagnosis of learning needs, formulation of learning objectives, learning activities, and evaluation) were related to learner satisfaction with the testing process and course materials. In particular, preparing the learner and diagnosis of learning needs were negatively related to learner satisfaction with the testing process and course materials. Table 3 shows correlations among the variables in this study.

Table 3.
Descriptive Statistics and Correlations for the Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Principle (.74)	1. NTK	-															
	2.SD	-.06	-														
	3.EX	-.17*	.30*	-													
	4.RL	.08	.14*	-.06	-												
	5.OL	-.04	.13*	.06	.05	-											
	6.MO	-.05	.34**	.22**	.18**	.09	-										
Process (.85)	7.PL	-.04	-.05	-.08	-.02	-.06	.07	-									
	8.DL	-.07	.07	.18**	.05	-.05	.04	-.21**	-								
	9.SLO	-.03	-.03	.00	.02	-.07	.03	-.02	.35**	-							
	10.DLE	-.05	.03	-.06	-.04	-.01	.09	.41**	-.30**	.04	-						
	11.LA	-.04	-.02	.00	-.02	-.13*	.04	.15**	.06	.16*	.63*	-					
	12.EVA	-.04	.03	.13*	.01	-.06	.03	-.14	.53**	.52**	-.23**	.03	-				
Learner satis- faction	13.SIN	-.01	.28*	.17**	-.05	.15*	.18**	-.05	.08	.08	-.05	.01	.06			(.82)	
	14.STE	-.07	-.01	.10	.05	-.05	.05	-.22**	.52**	.51**	-.23**	.05	.77**	.07		(.84)	
	15.SCM	-.03	.00	.08	.08	-.07	.02	-.26**	.48**	.26**	-.20**	.51**	.32**	.06	.32**		(.83)
	16.SCS	-.10	.36*	.08	.07	-.09	.07	.08	-.02	-.06	.05	-.02	-.00	.02	-.02	-.07	(.90)
Mean	2.90	3.50	3.91	2.82	3.50	3.44	2.17	3.64	3.14	2.67	3.18	3.27	4.20	3.43	3.70	3.46	
Standard Deviations	.60	.57	.61	.59	.73	.57	.69	.64	.78	.64	.42	.78	.73	.66	.58	.77	

** $p < .01$, * $p < .05$

Note: Reliability coefficients (Cronbach Alpha) are in the diagonal. Principle: Need to know (NTK), Self-directed learning (SD), Prior experience (EX), Readiness to learn (RL), Orientation to learning (OL), and Intrinsic motivation to learn (MO)/Process: Preparing the learner (PL), Diagnosis of learning needs (DL), Set learning objectives (SLO), Design of the learning experience (DLE), Learning activities (LA), and Evaluation of learning (EVA)/Learner satisfaction: Satisfaction with the instructor (SIN), Satisfaction with the testing process (STE), Satisfaction with the course material and setting (SCM), and Satisfaction with course structure (SCS)

Conclusion and Implications

Theoretically, this is the first study validating the API in the Jordanian context. The results of the current study could serve as evidence establishing further generalizability and robustness for using the API in different countries. In addition, this study can provide a theoretical foundation to elaborate the updated version of the API and expand the application of the principles and design elements of adult learning to diverse settings. Moreover, the components of API could be predictors to enhance learning satisfaction in a wide variety of adult learning settings.

In practice, educators and practitioners in the field could use the API and apply the results to prepare and develop instructional strategies for their learners. By working with adult learners, practitioners could use the principles of adult learning to incorporate andragogical design elements into their curricula to create greater learning outcomes. Also, the API can be used as a tool to collect information and feedback from learners to enhance their motivation, improve instructional methods, and update learning activities in their respective learning contexts. Additionally, educators and practitioners would use the API to increase learner satisfaction by combining learning principles and process with contents and learning methods for adult learners.

For future research, we suggest exploring the dynamics between API and other factors influencing positive outcomes in organizations. Possible research topics include how adult learning principles and design influence informal learning in the workplace and how employees perceive the relationships between their learning experience and outcomes. The extent to which API dimensions relate to individual characteristics (e.g., gender, race, educational level and motivation) also warrants investigation.

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