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*Educational and Psychological Measurement* 1993 53: 1105

DOI: 10.1177/0013164493053004023

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## A VALIDATION OF THE GOLDSMITH AND HOFACKER INNOVATIVENESS SCALE

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This paper reports a study validating a new self-report scale used to measure innovativeness or the tendency to adopt an innovation soon after it appears in a specific domain. Data obtained from 247 undergraduate business students showed that the 6-item scale was unidimensional and free from acquiescent responding. Rock music innovativeness was positively associated with opinion leadership for, involvement with, and both perceived and real knowledge of rock music. Innovativeness was also positively associated with the following: rock music magazine readership, time spent shopping for rock records, money spent for rock records, and time spent listening to rock music. These findings demonstrate both nomological and criterion-related validity of the new scale.

MANY researchers would like to be able to measure innovativeness, or the tendency to be among the first to adopt an innovation after its introduction into a social system. They have been hampered in this effort for two interrelated reasons. First, they sometimes fail to distinguish conceptually between *global* or *general innovativeness* and *domain-specific innovativeness*. The former is a personality dimension that cuts across the span of human behavior, but has only a minor impact on any specific adoption decision; the latter refers to innovative attitudes and behaviors within a certain cate-

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gory or domain of activity (Midgley and Dowling, 1978). A measure of one construct should not be substituted for the other. Second, researchers have lacked a means to measure either construct reliably or validly. Hurt, Joseph, and Cook (1977) pioneered the development of a reliable and valid self-report scale to measure global innovativeness that has been refined and further validated by Goldsmith (1991). The present study presents and further validates a new scale developed to measure domain-specific innovativeness. Although the study described here used consumer behavior as its specific context, the scale could be adapted for non-consumer activities. After a discussion of some of the issues surrounding the measurement of innovativeness the scale is presented and the validation study is described.

### *Measuring Innovativeness*

Most studies measure innovativeness by the time-of-adoption method. Using Roger's definition of innovativeness, the "degree to which an individual is relatively earlier in adopting an innovation than other members of his system" (Rogers and Shoemaker, 1971, p. 27), researchers often measure the time from an innovation's introduction to its adoption and use that as the indicator of an individual's innovativeness. Another method is to use time-of-adoption to assign subjects to adopter categories based on some arbitrary categorization scheme. This approach has been repeatedly criticized for both theoretical and methodological reasons (Hurt et al., 1977; Midgley and Dowling, 1978). Because their criticism is far reaching and grounded in the general theory of innovativeness, the reader is referred to Midgley and Dowling's (1978) critique. A short quotation sums up the essential point:

What is observable is the act and time of adoption or purchase of a new product. Innovativeness itself is a hypothetical construct postulated to explain and/or predict such observable phenomena, but existing only in the mind of the investigator and at a higher level of abstraction. (Midgley and Dowling, 1978, p. 230)

Some methodological consequences of using the time-of-adoption method are that there is no way to evaluate its reliability and validity, findings cannot be compared across studies, and generalizability is restricted to the individuals in a single study. Time-of-adoption methods cannot be used to predict future behavior. Moreover, they depend on the faulty memory of respondents and they may be biased by misconceptions of past events or interviewer

biases. Finally, sample sizes may be restricted by time and cost constraints, and they are innovation-bound (Hurt et al., 1977).

In place of time-of-adoption, Midgley and Dowling (1978) proposed that a deeper way to measure innovativeness in a consumer context is the use of a cross-sectional method, "determining how many of a prespecified list of new products a particular individual has purchased at the time of the survey" (p. 230). This method, they argued, would produce a better measure of the construct "innate innovativeness." Innate innovativeness is a personality trait possessed to some degree by everyone in a society. Their method, however, suffers from many of the criticisms directed toward time-of-adoption and would be difficult to develop and cumbersome to administer. Which product categories would be selected, which products in these categories, and how the researcher determines which products are new would present difficult problems for researchers and render the resulting measure of questionable value. Not the least of these problems is the requirement of repeatedly developing valid lists of new products every time a researcher needs to identify new buyers. Moreover, Midgley and Dowling (1978) intended this method to measure innate innovativeness as a global personality trait that should be distinguished from innovativeness in a specific domain. Hurt et al. (1977) have solved this problem with their measure of global or innate innovativeness conceptualized as a willingness to try new things. A revised version of this scale has been shown to be both valid and reliable by Goldsmith (1991).

Only recently have researchers proposed to measure domain-specific innovativeness directly, in much the same way as they measure attitudes, lifestyles, and personality—via self report. Goldsmith and Hofacker (1991) developed and validated a short reliable self-report scale that researchers can use to measure innovativeness for a specific product category (e.g., movies, food, clothing) with which people are likely to have regular purchase experience. The purpose of this article is to describe this innovativeness scale and to further validate it using variables not used in the earlier study, thereby extending the evidence for the scale's worth.

### *Description of the Innovativeness Scale*

Goldsmith and Hofacker (1991) developed the innovativeness measure as a short, valid, reliable Likert scale suitable for use in both self-administered (mail) questionnaires or in personal (face-to-face or telephone) interviews. It can be used before the innovation appears because it does not focus on an innovation as much as on

TABLE 1  
*Goldsmith and Hofacker's Domain Specific Innovativeness Scale<sup>a</sup>*

Scale Item	Factor Loading
1. In general, I am among the last in my circle of friends to buy a recording of a <i>new rock group</i> when it appears.	.77
2. If I heard that a <i>new rock album</i> was available in the store, I would be interested enough to buy it.	-.64 <sup>b</sup>
3. Compared to my friends I own few <i>recordings of rock music</i> .	.74
4. I will buy a <i>new rock music recording</i> , even if I haven't heard it yet.	-.44
5. In general, I am the last in my circle of friends to know the names of the latest <i>rock performers</i> .	.72
6. I know about <i>new rock recordings</i> before other people do.	-.77

<sup>a</sup> The response format is a five-point agree-disagree scale where 1 = Strongly Agree and 5 = Strongly Disagree.

<sup>b</sup> The positively worded items, Nos. 2, 4, and 6, are reverse scored and the six item scores added to form the total innovativeness score.

individuals and how they behave. A series of statements was written to embody the content of the concept of consumer innovativeness expressed as prototypical behaviors and states. Care was taken to insure that the statements were unambiguous and easy to understand. Both positive and negative versions of each statement were written to assess the effects of direction-of-item wording on the responses. The items were combined with other questions ascertaining innovative marketplace behaviors into a questionnaire administered to a large sample of college students. The behavioral measures were used as criteria along with factor analysis, item analysis, and reliability analysis to select the final scale items.

The resulting balanced (three positive and three negative) 6-item scale was evaluated for dimensionality, reliability, convergent and discriminant validity, nomological validity, criterion validity, predictive validity, and freedom from social desirability and acquiescence confounds using multiple samples of both college students and adult consumers across a variety of product categories (Goldsmith and Hofacker, 1991). These tests showed the scale to be a unidimensional measure possessing high reliability (internal consistency measured by Cronbach's alpha). It also demonstrated very good validity of all types. Table 1 presents the six scale items.

### *Purpose*

The present study examines the performance of the innovativeness scale in interaction with opinion leadership, enduring product involvement, and perceived and actual product category knowledge.

Also included are four behavioral measures designed to capture product information search and usage behavior. These measures were chosen because there exists some understanding of how innovativeness is related to each. Thus, previous theory and research about innovativeness allows us to test the nomological and criterion validity of the innovativeness measure by hypothesizing that innovativeness is positively associated with all eight of these variables.

### *Method*

#### *Sample*

The data came from 247 business undergraduates at a large southeastern university who completed the questionnaire for extra class credit. It is recognized that this sample does not adequately represent the population at large. Because the purpose of this study is to test the measure, however, rather than make estimates of population parameters, it was felt that students were sufficient. One hundred twenty-nine (52%) were men, and 118 (48%) were women. Age ranged from 19 to 27, with a mean of 21 years ( $SD = 1.3$ ). Most of the students were white (228 or 92%), and the others were black (12 or 5%), Hispanic (6 or 2%), and other (1 or .4%). Asked how they would describe their family, the overwhelming majority claimed they were either professionals (33%), managers (31%), or white-collar (30%).

#### *Domain of Interest*

Rock music was selected as the domain to investigate because it was felt that this type of fashionable product with a relatively shorter product life cycle is typical of the areas that could benefit from a deeper understanding of their innovators. It was also felt that rock music as a product category would be likely to elicit a wide distribution of innovators and non-innovators among college students. Rock music is also appropriate to all the constructs included in the study and is not gender-specific.

#### *Measures of Nomological and Criterion Variables*

Opinion leadership was measured using the 7-item King and Summers (1970) self-report scale revised by Childers (1986). This measure of opinion leadership, however, is not without its flaws. It

has been shown to be somewhat reliable (Childers 1986), and the reliability obtained in the current replication was .84. However, a principal axis factor analysis revealed a 2-factor structure. The first factor consisted of the first four items in the scale, and the second factor contained Items 5, 6, and 7. The latter items had more face validity as a measure of opinion leadership than did the first four items. They appear to have less to do with general interest in the product category and center more around the respondent as a source of product information. The items in the first factor all have to do with rock music as a topic of conversation and sharing information. Factor 2 reflects the tendency for the respondent to influence or be used as a source of product information by other consumers. Hence, it was decided to use only the final three items from the King and Summers scale as a measure of opinion leadership unconfounded by the first four items measuring simple social communication about the product. The reliability for this 3-item subscale was only moderate at .64 as measured by coefficient alpha. Because opinion leadership is not the central focus of this study, however, it was decided to use the 3-item subscale despite its poorer reliability.

Product category involvement was measured using Zaichowsky's (1987) revised Personal Involvement Inventory. It consists of 10 bipolar adjective pairs selected to measure interest, enthusiasm, and involvement with a product. The scores ranged from 10 to 70 with a mean of 50.47 ( $SD = 11.29$ ). Coefficient alpha was .96. An exploratory factor analysis revealed a single factor that accounted for 72% of the variance.

To provide a broader test of the performance of the innovativeness scale both perceived and objective knowledge were measured because it was felt that both perceived and objective knowledge were facets of overall consumer knowledge. Perceived product knowledge was measured by a 3-item scale. The scale was developed from the 6-item version used by Venkatraman (1990) and from a measure used by Beatty and Smith (1987). One item read, "Among my circle of friends, I'm one of the 'experts on rock.'" Factor analysis resulted in a single factor explaining 63% of the variance. The internal consistency of the scale was .82 as measured by coefficient alpha. The validity of the measure of perceived knowledge is evidenced by its positive correlation of .49 with the actual knowledge measure described next.

A measure of objective or actual product knowledge was also developed. Actual knowledge was measured as the sum of scores on two, 30-item matching tests. The two tests asked respondents to

match song titles with the names of rock music artists. List one contained album rock cuts selected at random from the past two years of the top 20 songs on *Billboard's* album rock chart. The second group of 30 recordings was derived from the previous nine months of the top 20 recordings on *Billboard's* "Hot 100" list. The tests were developed with the help of a local rock music station manager and were pretested on record store employees. Summed scores ranged from 0 to 49 with a mean total score of 17.77 correct matchings.

Two items were used to measure information search behavior. These are generalizations of those used by Beatty and Smith (1987). The first asked respondents to state how often they read rock music related magazines. It was scored on a 5-point scale with "frequently" and "never" on the poles. The other was a relative measure of the frequency of shopping for rock music recordings. It used the same scale as the first question.

Finally, single items were included to measure the average amount spent each month on rock music recordings and the respondent's estimated weekly rock music listening time. Descriptive statistics for all the measures appear in Table 2. This table also shows the intercorrelations of the measures.

Four versions of the questionnaire were prepared in which the order of four of the scales was changed to control for possible order effects. A MANOVA compared mean scores for variables across the four questionnaire types. No differences were significant ( $p > .05$ ), so questionnaire version did not appear to affect item responses.

## *Analysis and Results*

### *Dimensionality and Reliability*

The innovativeness scale displayed good psychometric properties. The range of the scores was from 6 to 30 and thus covered the entire possible range. Coefficient alpha for the innovativeness scale was .84. Computing coefficient alpha, however, presumes scale unidimensionality. In order to test for unidimensionality a factor analysis was performed. A principal axis factor analysis on the innovativeness scale showed a single factor with an eigenvalue greater than one accounted for 56% of the variance. Table 1 presents the factor loadings.



TABLE 2  
*The Variables in the Study*

Variable Name	No. Scale Items	Range	Mean	SD	Alpha	Pearson Correlations								
						1	2	3	4	5	6	7	8	9
1. Innovativeness	6	6-30	16.75	5.15	.84	1.00								
2. Opinion Leadership	3	3-14	9.14	2.36	.64	.57	1.00							
3. Involvement	10	10-70	50.47	11.29	.96	.46	.60	1.00						
4. Perceived Knowledge	3	3-15	8.83	2.72	.82	.69	.55	.55	1.00					
5. Real Knowledge	60	0-49	17.77	10.32	—	.49	.50	.42	.49	1.00				
6. Magazine Readership	1	1-5 <sup>a</sup>	2.24	1.11	—	.50	.40	.32	.39	.34	1.00			
7. Shopping Time	1	1-5 <sup>a</sup>	3.05	0.90	—	.54	.38	.24	.37	.33	.38	1.00		
8. Money Spent	1	1-9 <sup>b</sup>	2.73	2.07	—	.57	.38	.26	.39	.27	.40	.52	1.00	
9. Hours Listening	1	1-9 <sup>c</sup>	6.05	2.68	—	.38	.47	.53	.47	.35	.20	.16*	.24	1.00

Note. All correlation coefficients are significant at  $p < .01$ , two-tailed (\* significant at  $p < .05$ ).

<sup>a</sup> Categories for these items were frequently, often, sometimes, rarely, never.

<sup>b</sup> Categories for this item were in \$5.00 intervals beginning with less than \$5.00 up to over \$40.00.

<sup>c</sup> Categories for this item were in one hour increments beginning with less than one hour and continuing up to more than eight hours.

### *Acquiescence*

To evaluate the scale for the possible effects of acquiescence, or the tendency to agree with scale items regardless of item content, the scale was scored for acquiescence (without normal reverse-scoring of the negatively keyed items) and the positively and negatively worded items were summed to form two separate subscales and correlated. The correlation between the halves should be large and negative. In the present study, the correlation between the two halves was  $-.72$ . Finally, the positive and negative subscales were used in the following analyses with virtually identical results, further indicating a lack of acquiescent responding.

### *Innovativeness and Theoretical Consumer Behavior Variables*

Pearson correlations between scores on the total innovativeness scale and each of the four theoretical variables reveal four significant correlations, as hypothesized. Moreover, all four are also rather high correlations. This is a result of the close correlation of the concepts. Also clear in the literature are the natures of the relationships between innovativeness and opinion leadership and knowledge. Several researchers have found that opinion leaders tended to be more innovative (see Robertson, Zielinski, and Ward, 1984). Robertson et al. (1984) described in detail how innovativeness and knowledge are associated with opinion leadership and that they are often found in proximity to each other. They suggested that this proximity makes the constructs difficult to disentangle. High correlations among these four constructs are to be expected. The numbers reveal that the innovativeness measure is performing as it should.

For further analysis, the distribution of innovativeness scores was split to form two groups of consumers, rock music innovators and rock music non-innovators. Sixty-three students, the top 25% of the sample distribution (those with scores 21 and above on the scale), were designated as the innovators. Their scores showed that they agreed or strongly agreed with most of the items in the scale. The other 184 students (75%) were non-innovators. This split of the sample reflects the fact that early adopters are a minority of consumers in most market segments (Engel, Blackwell, and Miniard, 1990). A series of  $t$  tests compared mean scores on the consumer behavior constructs and behavioral measures between the two groups. These findings appear in Table 3.

The figures in Table 3 demonstrate that for popular rock music the

TABLE 3  
*Characteristics of Rock Music Innovators*

Characteristic	Mean Scores		<i>t</i>
	Innovators <i>n</i> = 63	Non-innovators <i>n</i> = 184	
Opinion Leadership	10.62	8.63	7.62
Involvement	56.48	48.38	6.31
Perceived Knowledge	11.19	8.02	10.82
Real Knowledge	23.89	15.67	5.80
Magazine Reading	2.92	2.01	6.66
Shopping Time	3.73	2.82	7.80
Money Spent	4.33	2.18	7.09
Listening Time	7.37	5.60	5.48

*Note.* All *t*-values are significant at  $p < .000$  (two-tailed probability).

noninnovator group had lower average opinion leadership, enduring involvement, perceived knowledge, and actual knowledge. All of the differences are significant at  $p < .001$ . The innovativeness scale thus does a good job of distinguishing between “active” involved consumers and those who are not.

### *Innovativeness and Consumption Behavior Variables*

Four product category behavior measures asked about rock music magazine readership, time spent shopping for recordings, spending on rock music recordings, and time spent listening to rock music. Again all the hypothesized correlations were positive. The split sample also yielded two groups that differed significantly ( $p < .001$ ) on each of these variables. The 63 innovators reported reading magazines and shopping for rock music recordings more often than the 184 non-innovators. The average innovator reported spending \$15.00 to \$19.99 per month on rock recordings while the noninnovators spent an average of \$5.00 to 9.99. Finally, the innovative group reported spending more hours listening to popular rock music each week than did the other group.

### *Discussion*

This study presents evidence showing that a new scale designed to measure domain-specific innovativeness was unidimensional, reliable, and free of acquiescent response bias. In addition, scores on the scale were correlated positively, as hypothesized, with measures of opinion leadership, enduring involvement, perceived knowledge, and real knowledge, demonstrating nomological validity. Innova-

tiveness scale scores were positively correlated with behavioral measures of magazine readership, time spent shopping spending, and time spent listening to rock music, also as hypothesized, thus confirming criterion related validity. While these findings cannot be generalized to describe any particular population, they provide strong evidence for the reliability and for the validity of the scale using several criteria not used in the original scale development study.

The results are important because they suggest that the scale can be used with confidence by researchers who wish to measure innovativeness within a specific domain of interest (in contrast with global or innate innovativeness) and avoid the problems associated with time-of-adoption methods. The scale can be easily adapted to other, non-consumer areas where innovations appear with some frequency so that respondents have a repertoire of attitudes and behaviors to draw upon in their self-reports and where constraints on their ability to adopt the innovation are not severe. Thus, the scale would not be appropriate for very infrequent domains of experience or where availability, income, regulations, or some other variables prevent individuals from freely adopting innovations.

The scale could be used to measure innovativeness as an independent or dependent variable in order to assess relationships with other variables in testing theory. It can also be used to assign individuals to adopter groups where desired, perhaps for more applied purposes. Further studies of both theoretical and applied subjects should supplement methodological studies such as this one as a body of research is built up expanding our knowledge of innovativeness in a variety of specific domains.

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