A Short Form of Sweeney, Hausknecht and Soutar's Cognitive Dissonance Scale

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Abstract

Cognitive dissonance is central to consumer decision making in some contexts, typically major purchases. This led Sweeney et al. (2000) to develop a scale that recognised the emotional and cognitive components of cognitive dissonance. The scale, however, is unbalanced as the emotional subscale has 15 items, compared to the three and four items used to measure the two cognitive subscales. Given that some items may be superfluous when the alpha coefficient is above 0.80 (Rossiter, 2002), as was the case for this scale in the original study, and also considering the need to minimise respondent fatigue (DeVellis, 2003), the present study investigated the possibility of reducing the emotional subscale, while maintaining the strong measurement properties of the original scale. Using some of the data from Sweeney, Hausknecht and Soutar (2000), a five-item emotional subscale was developed, resulting in a 12-item dissonance scale, which was short, reliable and valid.

Keywords

Cognitive dissonance; Scale development

INTRODUCTION

Dissonance has been of interest to marketing researchers since Festinger's (1957) early research suggested it could impact on people's decision-making processes, potentially affecting attitudes towards and satisfaction with purchase decisions (Cummings and Venkatesan, 1976). Dissonance remains a topic of great interest in social psychology, (e.g. Gawronski and Strack, 2004; Hoshino-Browne et al., 2005). However, relatively little empirical dissonance research has been undertaken in the consumer area. Oliver (1997) viewed this as inexplicable and unfortunate and suggested the need for a practical consumer related dissonance measure as a starting point.

Montgomery and Barnes (1993) had developed a short scale that attempted to measure people's psychological experiences (e.g. "dissonant consumers often display anxiety", or "dissonant consumers may experience low levels of expected satisfaction"). However, rather than identifying dissonance issues through listening to consumers who had experienced dissonance, the scale was generated subjectively and through an examination of prior suggestions. While a commendable

attempt to clarify dissonance, the scale had flaws as it co-mingled dissonance reducing strategies with the dissonance construct itself. Consequently, Sweeney, Hausknecht and Soutar (2000) developed a multidimensional measure of consumer dissonance based on consumers' dissonance experiences.

Having earlier noted that researchers had created a "theoretical oxymoron in which an essentially emotional construct bears the burden of 'cognitive' in its name' (Hausknecht, Sweeney, Soutar & Johnson, 1998), it was not surprising that the scale conformed to the researchers' expectations of multidimensionality, as it had one emotional and two cognitive (concern over the deal and wisdom of purchase dimensions) components. The scale had good measurement properties and related well, and as expected, to a number of other constructs (satisfaction, perceived value and the difficulty of judging quality).

While the two cognitive dimensions only had a few items (three and four respectively), the emotional dimension was relatively long (15 items), which has been problematic as the scale is likely to be one of a number of constructs in any research project. Such a problem is not unique to this scale and there has been an increasing interest in developing short form scales in recent years for practical reasons in data collection (e.g. Cacioppo, Petty and Kao, 1984; Thomas, Soutar and Ryan 2001). DeVellis (2003) describes the development of a scale's length as balancing the need for high reliability, while limiting the impact on respondents who answer surveys. Further, Rossiter (2002), among others, has argued that 0.80 as an ideal reliability for short scales, suggesting additional items are likely to be redundant. Consequently, it might be that the emotional scale can be reduced, while retaining its good measurement properties, so as to make it more useful for the types of studies in which it is likely to be used. The present study was undertaken for this purpose and the approach taken and the results obtained are outlined in the subsequent section.

THE PRESENT STUDY

Some of the data from Sweeney, Hausknecht and Soutar (2001) study were used to examine the possibility of reducing the 15-item emotional sub-scale. As noted in their paper, data were collected from customers of stores selling durable goods as dissonance is more likely to occur for major and high involvement purchases (Korgaonkar and Moschis, 1982), which typifies many durable goods. Customers making a major purchase (worth more than $400) from a furniture store (with two outlets) were asked to fill in a self-completion questionnaire and return it in a reply paid envelope within ten days. As an incentive, participants were included in a draw for a voucher redeemable at the store. The survey was conducted over a six-month time period and all major purchase customers were asked to participate. A total of 323 responses were obtained, providing a response rate of 44%.

Decisions about which of the 15 items (measured on a 7-point disagree-agree scale) to delete from the emotional subscale were made in a sequential order. Initially the means and variances of the fifteen items were computed. The means were generally low (ranging from 1.18 to 2.02), suggesting respondents had little dissonance. Further, a number of the items had minimal variation, suggesting they added very little to the scale. Three items that had variances of less than 0.80 were removed at this stage. Following Thomas, Soutar and Ryan (2001), the correlation between the summated scales based on the original fifteen items and the remaining twelve items was computed to see if there was any loss in information. The correlation in this case was 0.99, suggesting there was no loss of information when using the twelve items.

Cronbach's (1951) coefficient alpha reliability coefficient for the twelve item scale was 0.96, suggesting it was likely to be unidimensional. This was confirmed by computing coefficient beta, which was developed by Revelle (1979) as a measure of reliability that considers the possible existence of subscales. Coefficient beta is the worst split-half reliability of a scale, while

coefficient alpha is the average of all split-half reliabilities (Cooksey and Soutar 2006). In this case, coefficient beta was high at 0.93, which supported the notion that the reduced set of items was related to an underlying unidimensional scale.

The remaining twelve items were examined through confirmatory factor analysis. Initially the standardised coefficients (loadings) were examined as items with low loadings should be removed. Indeed, Bagozzi and Yi (1988) have suggested loadings should be greater than 0.60. In this case loadings ranged from 0.68 to 0.93, so no item were removed due to this criterion. However, as there was a clear drop (0.10) between the second and third lowest items, the two items with the lowest loadings were removed. The remaining ten items had loadings that ranged from 0.78 to 0.93. A confirmatory factor analysis suggested the data did not fit very well, as the chi-square statistic divided by the degrees of freedom was 18.35, which was much higher than the value of 3.00, which is suggested as the maximum acceptable figure (Hair et al. 2006). An examination of the modification indexes suggested the poor fit was due to correlated errors that had not been modelled. As this is often due to antecedent factors that were not included in the model, such as social desirability bias (Keillor, 2001), it seems desirable to remove items that create such problems, especially as the present purpose was to reduce the number of items in the scale. Consequently, items that caused a number of correlated errors were removed in a "stepwise" fashion until a good fit was obtained. As a result of this process, five items were left in the revised short form emotional sub-scale.

In this case, the data fitted the model very well and there was no need to model correlated errors, as the chi-square statistic was 8.6 (df=5), which was not significant even at the 10% level, while the other goodness of fit statistics were also excellent (standardised chi-square statistic = 1.72, AGFI=0.97, CFI=0.99, NFI=0.99. RMR=0.01. RMSEA=0.05). The loadings ranged from 0.79 to 0.92, and the average variance extracted was 0.74 (compared to 0.72 for the original 15-item scale). Further, coefficient alpha for the emotional subscale only fell slightly when items were

deleted (falling from 0.97 in the original 15-item scale to 0.92 in the case of the reduced scale). The final subscale reliabilities, which are shown in Table 1, ranged from 0.81 to 0.92 suggesting that the reduced scale had good reliability and convergent validity (Fornell and Larcker 1981; Rossiter, 2002). Once again, the correlation between the five item scale and the original fifteen item scale was computed. In this case, the correlation was 0.97, which indicated that there was no loss of information when using the short form of the emotional sub-scale. The final suggested reduced form dissonance scale is shown in Table 1.

Table 1: The Revised Dissonance Scale

Sub-Scale	Items	Coefficient alpha
Emotional	I felt frustrated	0.92
(After I bought the product…)	I was in despair	
	I was depressed	
	I felt sick	
	I felt hollow	
Wisdom of purchase	I really need this product	0.81
(I wonder if…)	I should have bought anything at all	
	I have made the right choice	
	I have done the right thing in buying this product	
Concern over deal	I'd been fooled	0.86
(After I bought the product	They had spun me a line	
I wondered if …)	There was something wrong with the deal I got	

The discriminant validity of the three sub-scales was also assessed using the procedure suggested by Fornell and Larcker (1981). The correlations between the three dimensions were all significantly less than one, as can be seen in Table 2, in which the correlations are shown in the bottom half of the triangle. As is also shown in Table 2, the average variance extracted for each

dimension was 0.51 or greater, which, in each case, exceeded the squared correlation between any pair of constructs, which had a maximum value of 0.31 (0.57^2), thus satisfying the requirements for discriminant validity. Consequently, it seems that Sweeney, Hausknecht and Soutar's dissonance scale can be revised to a three dimensional, 12-item scale, made up of an emotional dimension (5 items), a concern over the deal dimension (3 items) and a wisdom of purchase dimension (4 items).

Table 2: Average Variance Extracted and Correlations between the Dimensions

Construct	Average Variance Extracted	Emotional	Wisdom of Purchase
Emotional	0.74		
Wisdom of Purchase	0.71	0.57	
Concern over Deal	0.51	0.48	0.49

CONCLUSIONS

The present study developed a short and practical measure of cognitive dissonance based on Sweeney, Hausknecht and Soutar's (2000) well known 22-item scale. The reduced form scale has equally good measurement properties to the original scale, but offers a significant reduction in length. The short scale can be used by academics wishing to examine post-purchase decision models. A potentially valuable future avenue of research would be to track changes in dissonance over purchase stages, such as the post use stage that Oliver (1997) called the delta stage; thus developing a dynamic model of a consumer's relationship with the products they purchase. The scale can also be easily used by managers interested in identifying dissonant customers as targeted post-purchase follow up strategies can be used to improve such customers' satisfaction and value perceptions (Sweeney, Hausknecht and Soutar 2000).

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