

# **OFFICE OF SCALE RESEARCH**

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## **The Psychometric Quality of Aad Scales**

by

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## THE PSYCHOMETRIC QUALITY OF $A_{ad}$ Scales

In the early 1980s there was a growing awareness that the current state of marketing-related measurement was inadequate. One result of this awareness in the advertising industry was the release of PACT (Positioning Advertising Copy Testing), a statement of fundamental copy testing principles (Yuspeh 1982). Among the conclusions drawn was that too much reliance had been placed on single-item measures to assess the performance of ads and that there had been a lack of attention to measure validation. Similarly, scholarly researchers at that time were being lectured on such things as the need for multi-item scales (Jacoby 1978), procedures for developing better scales (Churchill 1979), and the state of reliability and validity testing in marketing-related research (Peter 1979, 1981).

Despite the attention focused on psychometric quality at that time a critical review of the state of advertising research a decade later observed that there had been little objective data provided to assess the progress made in the development and use of multi-item scales (Stewart 1992). Given this, it is the purpose of this study to provide an initial response to Stewart's call for assessment. Specifically, an inventory and evaluation will be made of one of the field's most popular measures: attitude-toward-the-ad ( $A_{ad}$ ). This paper examines the extent to which published measures of  $A_{ad}$  have been validated and provides researchers with data and criteria to assist in the selection of  $A_{ad}$  scales for use in their own studies. Suggestions are also provided regarding measurement of  $A_{ad}$  in the future.

## Background

Since the early 1980s when the importance of the construct was introduced (Mitchell and Olson 1981; Shimp 1981), articles involving **A<sub>ad</sub>** have been published over and over again in numerous well known journals. A comprehensive review of advertising-related scales reported in scholarly journals has indicated, in fact, that measures of **A<sub>ad</sub>** were employed in far greater frequency than any other scaled measure during the 1980s (author 1993). Not only have semantic differential measures of **A<sub>ad</sub>** been the most used of *advertising*-related scales but it also appears that they have been reported more than almost any other scale in the wider field of *marketing*-related research as well (Bruner and Hensel 1992).

Given the importance of the construct to researchers and the number of studies involving it over the past decade-and-a-half one might think that considerable effort would have been expended along the way towards developing a valid measure with the potential for wide acceptance.. Yet, this has not occurred. In fact, several authors have expressed concern that researchers are not carefully specifying the domain of the **A<sub>ad</sub>** construct and lack direction in developing valid measures (Allen and Madden 1989; Madden, Dillon, and Twible 1986; Wright 1986).

Since there is no agreement about how to measure **A<sub>ad</sub>** how are researchers to choose among the many scales that have been produced? With no commonly accepted measure and no critical comparison of the alternatives having been published researchers may simply borrow a previously reported scale. The problem is that while some operationalizations are more popular or convenient to use than others that does not necessarily mean they are more valid. Possibly worse is when researchers fall into a trap similar to what was observed by

Jacoby (1978) with respect to the measurement of brand loyalty. Specifically, they may regard it as acceptable to cherry-pick items from a variety of sources, consider their summation to produce a measure of  $A_{ad}$  based on little more than face validity, and then compare the findings with those of other studies even though they may have had very different working definitions and operationalizations.

Researchers could make more informed decisions about  $A_{ad}$  scales if they were provided a list of alternative measures as well as evidence regarding each scale's validity. One way the psychometric quality of the scales could be judged would be to examine the degree to which commonly accepted development procedures have been followed. A guide for scale construction and evaluation used by many researchers in the area of marketing was proposed by Churchill (1979). The steps in the process are: specify domain of construct, generate sample of items, collect data, purify measure, collect data, assess reliability, assess validity, and develop norms. Suggestions and standards have been provided by others in the field (e.g., Furse and Stewart 1982; Gerbing and Anderson 1988) as well as out of the field (e.g., AERA, APA, and NCME 1985; Nunnally and Bernstein 1994) that complement and strengthen the Churchill paradigm.

The purpose of this study is to use the major steps in Churchill's paradigm as a basis for assessing the progress that has been made since the early 1980s in development of  $A_{ad}$  scales. The achievements that have been made in validating those scales as well as movement towards the use of those few scales that have provided the greatest evidence of validity will also be examined. It is generally recognized that validation is an on-going process and may only be achieved after a series of studies have been conducted (e.g., Cronbach 1971). Because of this, no one scale is the object of this study's scrutiny. Instead, the focus is on the

degree of progress made by the field in measuring **A<sub>ad</sub>** as well as providing researchers with information that could help them make better scale selections.

## **Methodology**

Scales included in the analysis were identified through a search of those journals related to the field of marketing that are most well respected and likely to publish articles involving **A<sub>ad</sub>** (e.g., Heischmidt and Gordon 1993). The six journals reviewed were *Journal of Advertising*, *Journal of Advertising Research*, *Journal of the Academy of Marketing Science*, *Journal of Consumer Research*, *Journal of Marketing*, and *Journal of Marketing Research*. An eleven year period, 1981 to 1991, was selected for review because it spans the decade that began with the publication of the articles which suggested the importance of the **A<sub>ad</sub>** construct (Mitchell and Olson 1981; Shimp 1981). As a means of constraining the search of the thousands of articles from that period only those studies that included measures of **A<sub>ad</sub>** using at least three sets of bi-polar adjectives and for which the items were known were selected for greater scrutiny. Admittedly, a few Likert-type measures of **A<sub>ad</sub>** have been used over time but the semantic differential has overwhelmingly been the scale type of choice.

The key steps of the Churchill paradigm were used to guide the assessment of each scale in the domain. Each of these steps is reviewed in the next section along with the findings of this study.

## **Findings**

Scales from thirty-six articles were identified as meeting the stated criteria. Due to the fact that some studies used more than one measure in order to capture multiple attitude components, a total of forty-six scales composed the database. A listing of the scales as well as the studies from which they were drawn is provided in Table 1.

[Table 1 about here]

### Specification of Scale Domain

As an initial scale construction step, it has been recommended that researchers be quite specific about describing what they are trying to measure (AERA, APA, and NCME 1985, p. 25, 26; Churchill 1979). Domain specification is more than simply saying some variable is to be measured in a study; a detailed description of what is included and what is not included in the construct are necessary.

Evidence of domain specification was liberally noted here if authors described their ad evaluation measure to any significant degree beyond simply referring to it by some name (e.g., **Aad**). Only 13% of the scales came from articles where some semblance of domain specification occurred. In contrast, it was more typical of articles to merely mention the name of the variable and list the items composing the scale.

As a further examination of domain specification, an attempt was made to determine the source of each scale. A scale's origin is relevant to this inquiry because it is quite possible for a measure to be developed and validated to some degree in one or a series of studies and for subsequent users to not feel it necessary to engage in such testing. Given this, greater emphasis on proper testing is incumbent on those who create new scales or

substantially modify old ones. Understanding the source of scales also helps provide a sense of the degree to which researchers are building on the work of others or ignoring it.

Determining the origin of the scales was the most difficult part of the study. This was due to the fact that few authors stated explicitly whether they developed a scale themselves, modified a previously used scale, or borrowed a scale in tact from a previous study. To more accurately judge a scale's source several pieces of information were collected and considered. (See Appendix). First, any statements about the source of a scale or its items by the authors themselves were noted. Then, with a listing of all of bi-polar adjectives used in scales being reviewed as well as those from sources referenced by authors outside the domain a comparison of item sets was made. The previously reported **A<sub>ad</sub>** scale with which a later scale was most similar was identified. Even if not explicitly described, effort by authors to develop scales from scratch was noted. Finally, a conclusion was drawn about a scale's likely origin based upon these data.

As can be seen in Table 1, the data indicated that only 26% were clearly borrowed in tact from a previously reported study. About 30% of the scales appeared to be modifications of previously reported **A<sub>ad</sub>** measures. Another 35% had strong indications of being original. Finally, the origin of the remaining 9% could not be guessed with a sufficient degree of certainty.

### Purification of Measure

This step involves at least a couple of important activities: estimating the reliability of a scale and confirming its unidimensionality. The two are not the same thing even though

they have sometimes been treated synonymously in the past. Reliability refers to “the degree to which measures are free from error and therefore yield consistent results” (Peter 1979, p. 6). While test-retest may be viewed as the most commonly used indicator of measure reliability in the social sciences (Litwin 1995, p. 8), Cronbach’s alpha is overwhelmingly the statistic of choice within marketing-related research (Peterson 1994, p. 382). This is probably because alpha is more conveniently calculated than test-retest, it is specifically designed for scales with multiple items (3+), and it focuses on the internal consistency of a measure rather than the stability of scores over time. An alpha of .70 or greater was set as the level necessary to be considered supportive of reliability (Peterson 1994).

Most (91%) of the scales had their reliability reported and Cronbach’s alpha was the statistic used in almost every case. Further, support was indicated for reliability in the majority of cases (88%) when an estimate was provided. However, another way of looking at this is that a fifth of the scales were reported without any evidence of reliability or where the evidence indicated that the scales were not reliable.

Although reliability has long been recognized as a critical feature of a good scale, unidimensionality has only recently been treated just as important. Specifically, a scale should show evidence of unidimensionality if it is expected to measure a unidimensional construct. The evidence typically comes from some form of factor analysis with CFA being proposed as the most rigorous test (Gerbing and Anderson 1988).

In contrast to the high reporting of reliability, only 26% of the scales provided evidence that dimensionality had been tested. In each of these cases the evidence indicated (or the authors stated) that there was support for the unidimensionality of the scales.

Evidence of unidimensionality was provided in each of these cases by some form of factor analysis, either exploratory or confirmatory.

### Assessment of Validity

A scale can be reliable and unidimensional but still not measure what it is supposed to measure, and thereby, lack validity. There are several types of validity: content, criterion, and construct with the latter typically being the most difficult to confirm (AERA, APA, and NCME 1985, p. 9). Among the types of construct validity are convergent, discriminant, and nomological (Peter 1981). For each piece of research it was noted whether the authors stated that they were attempting to test a scale's validity and, if so, whether they claimed to have found evidence in support of it. While a certain pattern of relationships reported in a study could be construed *post hoc* by others as providing an indication of a scale's validity, it was not considered here to be evidence of nomological validity assessment unless the authors themselves stated it as such.

The findings indicate that validity of **A<sub>ad</sub>** scales has been rarely examined. Only three sets of authors reported evidence of validity. Even in these few cases where some tests were conducted they were quite limited and did not so much validate the scales as they merely began the process. Specifically, the discriminant validity of the **A<sub>ad</sub>** scale was examined in the study by Madden, Allen, and Twible (1988). The studies by Burton and Lichtenstein (1988) as well as Perrien, Dussart, and Paul (1985) provided evidence of content validity for their measures such that judgment of item appropriateness was gathered from others *before* the scales were used in their main studies. This is contrasted against face validity where

researchers assert *after* a scale is developed that it appears to have measured what it was supposed to (Nunnally and Bernstein 1994, p. 110).

### Development of Norms

Scale scores are best interpreted in light of normative data regarding a measure's use with different groups and in different situations (Furse and Stewart 1982). Which norms are most relevant for comparison depends upon whether the scale is *subject-centered* or *stimulus-centered* (Torgerson 1958, p. 46). With the former the focus is on systematic variation across respondents. Norms for this sort of usage can help indicate whether findings might have been different if a different sample had been used (Nunnally and Bernstein 1994, p. 309). For example, if college students are used in a study and previous norms suggest that they tend to score ads more harshly than the general population then some moderation in the study's conclusions can occur. If instead, **A<sub>ad</sub>** is viewed as stimulus-centered then the systematic variation of scores across ads is most relevant. One might want to note, for instance, whether people tend to have more positive attitudes towards ads for products in some categories (e.g., soft drinks) compared to other (e.g., laundry detergent). Of course, it is also possible that both the stimulus and the subject are of interest to the researcher. In that case the importance of having scale norms would only increase.

None of the studies examined for this review provided evidence that norms for **A<sub>ad</sub>** scales have been developed.

## Discussion

**A<sub>ad</sub>** may be one of the most popular constructs of study in scholarly marketing research but the use of rigor to operationalize and validate its measurement has not been as

popular. No particular study is faulted for failing to provide evidence of validity but it is clear that many of these studies share in their delinquency for not addressing the validity of their scales at all. In some cases it may be true that testing occurred but was not reported. But, even in those cases the research community still suffers. This occurs because there is no objective basis on which to conclude that a scale is superior to the many other measures that have been reported over time.

The lack of domain specification is curious given that it does not have to be a particularly taxing activity. There may be the impression that *everyone knows what the domain is and agrees about it so why waste space explaining the obvious?* The problem is that the evidence here shows the opposite: there is a lack of agreement about the domain of **A<sub>ad</sub>**. At least two main views of the domain are evident. Some researchers have followed Rosenberg's conceptualization of attitudes and use two or more measures to capture the hypothesized dimensions of **A<sub>ad</sub>** (e.g., Rosenberg and Hovland 1960). In contrast, others have treated **A<sub>ad</sub>** as unidimensional, consistent with the Fishbein theory of attitudes (e.g., Fishbein and Ajzen 1975).

In a related issue, it is not clear why authors have not been more forthcoming about the sources of their scales. Maybe it is thought that if it is admitted that a scale is original or greatly modified it will raise more questions than if the source is not mentioned at all. It is also troubling that in several cases statements made in the articles suggested that a scale was borrowed from a previous study where in actuality enough change had occurred so as to more accurately be described as a major modification if not altogether original scale.

A scale worth using to measure such an important construct as **A<sub>ad</sub>** is also one that is worth validating. If the evidence suggests that the scale is approaching validation then norms should be developed to determine the scale's characteristics with a variety of people, ads, and situations. But, this study indicates that most **A<sub>ad</sub>** scales are unique and have been used only once (54%). Admittedly, the Mitchell and Olson (1981) scale has been used in exact or slightly modified form more than any other scale. Unfortunately, the studies using it have not specifically addressed the validity of the measure. In other words, the scale may be more *popular* than others but evidence is lacking to conclude at this point that it is *better* than alternative scales.

In fact, with so little validation work having been conducted no one scale or set of measures can be recommended at this point. Instead, it is suggested that a priority be set by the discipline on studies which focus on validation of **A<sub>ad</sub>** scales. Studies should also be conducted for the development of norms for those few scales that appear to have the potential to become standards. Once several scales are validated then studies which compare their differing *utilities* would be of value. This characteristic of measures has to do with “the relative value of an outcome with respect to the set of other outcomes” (AERA, APA, and NCME 1985, p. 94). Just as reliability is a necessary but insufficient condition for validity so validity is a necessary but insufficient condition for utility.

Until such time as these critical studies are published interested researchers are urged to build upon the best studies their literature reviews can uncover. The tendency to ignore past research and develop quick and dirty measures must be halted. The data provided here can assist in the critical comparison and selection of **A<sub>ad</sub>** scales. Each additional study that uses a previously reported scale plays an important role in the on-going process of validation.

## **Conclusion**

The PACT coalition and noted scholars strongly advised the validation of multi-item measures. It is evident from the analysis of forty-six Aaa scales that there has been considerable movement toward achievement of this goal as it concerns measure reliability. At the same time, however, such fundamental qualities as domain specification and unidimensionality have not been routinely examined. More sophisticated aspects of the scale development paradigm have barely been dealt with at all.

What remains is to determine how changes in the usage of multi-item scales has progressed in industry as opposed to the academic research examined here. Further, periodic assessment of scale usage would seem to be a desirable goal in order to chart the progress being made by the field. If these matters are effectively dealt with by academic and industry researchers in the next few years then there is some hope that the field may enter the next century with substantially greater research maturity than now exists.

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## APPENDIX SCALE SOURCE INFORMATION

STUDY	Scale	SOURCE	Development	Conclusion	
Authors (date)	Name	Authors' Statements	Overlap in Item Sets	Effort	
Buchholz & Smith (1991)	Aad	Items used by MacKensie & Lutz (1989)	40% (Keller 1987)	Unknown	Original
Burton and Lichtenstein (1988)	cognitive	Items drawn from unspecified literature & Wells (1964)	33% (Kilbourne et al. 1985)	Yes	Original
Burton and Lichtenstein (1988)	ffective	Items drawn from unspecified literature & Wells (1964)	25% (Zinkhan & Zinkhan 1985)	Yes	Original
Chattopadhyay & Basu (1990)	Aad	Nothing said about source	60% (Mitchell & Olson 1981)	Unknown	Modified
Cox & Cox (1988)	Ad eval.	Nothing said about source	100% w/Cox & Locander (1987)	Unknown	Borrowed
Cox & Locander (1987)	Ad eval.	Similar to items used by Mitchell & Olson (1981)	40% w/Mitchell & Olson (1981)	Unknown	Modified
Droge (1989)	Aad	Cites Mitchell & Olson (1981)	60% w/Mitchell & Olson (1981)	Unknown	Modified
Gardner (1985)	Aad	Follows Mitchell & Olson (1981)	100% w/Mitchell & Olson (1981)	Unknown	Borrowed
Hastak & Olson (1989)	Ad eval.	Nothing said about source	75% (Mitchell & Olson 1981)	Unknown	Modified
Hill (1988)	Global Aad	Suggests modifying Mitchell & Olson (1981) scale	80% (Mitchell & Olson 1981)	Unknown	Modified
Hill (1988)	emotional	Suggests borrowing Hill & Mazis (1985) scale	40% (Hill & Mazis 1985)	Unknown	Modified
Hill (1989)	Global Aad	Suggests modifying Mitchell & Olson (1981) scale	100% (Hill 1988)	Unknown	Borrowed
Hill (1989)	emotional	Suggests borrowing Hill & Mazis (1985) scale	100% (Hill 1988)	Unknown	Borrowed
Homer (1990)	Aad	Nothing said about source	50% (Muehling 1987)	Unknown	Unknown
Janiszewski (1988)	Ad eval.	Nothing said about source	50% (Zinkhan & Zinkhan 1985)	Unknown	Unknown
Kamins (1990)	Aad	Similar to Smith & Swinyard (1983) & Gardner (1985)	40% (Cox & Locander 1987)	Unknown	Original
Kamins, et al. (1991)	Aad	Similar to Marks & Kamins (1988)	75% (Kamins 1990)	Unknown	Modified
Keller (1987)	Aad	Cites Edell & Staelin (1983)	60% (Mitchell & Olson 1981)	Unknown	Modified
Keller (1991a)	Aad	Nothing said about source	100% (Keller 1987)	Unknown	Borrowed
Keller (1991b)	Aad	Nothing said about source	100% (Keller 1987)	Unknown	Borrowed
Kilbourne (1986)	cognitive	Similar to scale used by Baker & Churchill (1977)	100% (Kilbourne, et al. 1985)	Unknown	Borrowed
Kilbourne (1986)	ffective	Similar to scale used by Baker & Churchill (1977)	100% (Kilbourne, et al. 1985)	Unknown	Borrowed
Kilbourne, et al. (1985)	cognitive	Each item used by Baker & Churchill (1977)	50% (Baker & Churchill 1977)	Unknown	Modified
Kilbourne, et al. (1985)	ffective	Each item used by Baker & Churchill (1977)	75% (Baker & Churchill 1977)	Unknown	Modified
Machleit & Wilson (1988)	Aad	Nothing said about source	33% (Mitchell & Olson)	Unknown	Original
MacInnis & Park (1991)	Aad	Nothing said about source	60% (Keller 1987)	Unknown	Modified
MacKenzie & Lutz (1989)	Aad	Nothing said about source	50% (Cox & Locander)	Unknown	Unknown
Macklin, et al. (1985)	Aad	Nothing said about source	11% (Mitchell & Olson)	Unknown	Original
Madden, et al. (1988)	Ad eval.	Several cites mentioned	50% (Cox & Locander 1987)	Yes	Original
Miniard, et al. (1990)	Aad	Nothing said about source	80% (Mitchell & Olson 1981)	Unknown	Modified
Mitchell (1986)	Aad	Follows Mitchell & Olson (1981)	100% (Mitchell & Olson 1981)	Unknown	Borrowed
Mitchell & Olson (1981)	Aad	Nothing said about source	---	Yes	Original
Muehling (1987)	Aad	Cites 11 sources for items	25% (Mitchell & Olson 1981)	Unknown	Original
Muehling, et al. (1991)	Aad	Similar to Madden, Allen, & Twibble (1988)	50% (Janiszewski 1988)	Unknown	Unknown
Okechuku & Wang (1988)	cognitive	Follow Baker & Churchill (1977)	100% (Baker & Churchill 1977)	Unknown	Borrowed
Okechuku & Wang (1988)	ffective	Follow Baker & Churchill (1977)	80% (Baker & Churchill 1977)	Unknown	Modified
Olney, et al. (1991)	utilitarian	Components taken from Batra & Ahtola (1990)	17% (Kilbourne et al. 1985)	Unknown	Original
Olney, et al. (1991)	hedonism	Components taken from Batra & Ahtola (1990)	17% (MacKenzie & Lutz 1989)	Unknown	Original
Perrien, et al. (1985)	cognitive	Items drawn from unspecified literature	40% (Baker & Churchill 1977)	Yes	Original
Perrien, et al. (1985)	ffective	Items drawn from unspecified literature	14% (Baker & Churchill 1977)	Yes	Original
Petroshius & Crocker (1989)	cognitive	Suggests consistency w/Baker & Churchill (1977)	100% (Baker & Churchill 1977)	Unknown	Borrowed
Petroshius & Crocker (1989)	ffective	Suggests consistency w/Baker & Churchill (1977)	80% (Baker & Churchill 1977)	Unknown	Modified
Severn, et al. (1990)	Aad	Nothing said about source	38% (Muehling 1987)	Unknown	Original
Yi (1990)	Aad	Nothing said about source	100% (Mitchell & Olson 1981)	Unknown	Borrowed
Zinkhan & Zinkhan (1985)	cognitive	Nothing said about source	---	Unknown	Original
Zinkhan & Zinkhan (1985)	ffective	Nothing said about source	33% (Baker & Churchill 1977)	Unknown	Original

## APPENDIX

### SCALE SOURCE INFORMATION

**Scale Name:** How the authors themselves referred to the measure.

**Authors' Statements:** A paraphrase of what, if anything, the authors say about the source of their scale or its items.

**Overlap In Item Sets:** Percent of items in two sets that are held in common. Correspondence was reported for the scale (published at least a year earlier) with which the degree of overlap was highest utilizing the matrix provided in Bruner (1995). Examination of item sets was not only made with all of the other scales in the domain of review but also with the sources cited by the authors. However, final comparisons were limited to measures of the same construct (e.g., **A<sub>ad</sub>**) and did not consider the overlap of items used in measuring different constructs (e.g., **A<sub>B</sub>**).

**Development Effort:** Whether a scale was the result of developmental efforts reported by the authors as part of the study. The typical evidence for this came from a gathering items from the literature followed by some means of purifying the set.

**Conclusion:** Complete overlap in item sets between two studies it was interpreted to mean that the later study borrowed from the earlier one. For those scales where the overlap was between 50% and 100% the tendency was to assume was that the later study modified the earlier scale. An overlap of less than 50% suggested originality given that the majority of the scale's contents had not been used in any known study previously. When exactly half a scale's items was held in common with a previously published measure the nature of its source was based upon other information. If the other information was itself inconclusive then no conclusion regarding the scale's origin could be safely drawn. Exceptions to these decision rules were possible when the authors' statements and/or development work indicated something different had occurred.

**TABLE 1**  
**PSYCHOMETRIC TESTING OF Aad SCALES**

STUDY AUTHORS (date)	SCALE NAME	SCALE SOURCE	SPECIFIED DOMAIN	RELIABILITY		DIMENSIONALITY		VALIDITY		DEVELOPED NORMS
				INVESTIGATE	SUPPORTED	INVESTIGATED	SUPPORTED	INVESTIGATED	SUPPORTED	
Buchholz & Smith (1991)	Aad	Original	No	alpha	Yes	No	--	No	--	No
Burton & Lichtenstein (1988)	cognitive	Original	Yes	alpha	Yes	Yes	Yes	Yes*	Yes	No
Burton & Lichtenstein (1988)	affective	Original	Yes	alpha	Yes	Yes	Yes	Yes*	Yes	No
Chattopadhyay & Basu (1990)	Aad	Modified	No	alpha	Yes	No	--	No	--	No
Cox & Cox (1988)	Ad eval.	Borrowed	No	alpha	Yes	No	--	No	--	No
Cox & Locander (1987)	Ad eval.	Modified	No	alpha	Yes	No	--	No	--	No
Droge (1989)	Aad	Modified	No	alpha	Yes	No	--	No	--	No
Gardner (1985)	Aad	Borrowed	No	alpha	Yes	No	--	No	--	No
Hastak & Olson (1989)	Ad eval.	Modified	No	alpha	Yes	No	--	No	--	No
Hill (1988)	Global Aad	Modified	No	alpha	Yes	No	--	No	--	No
Hill (1988)	emotional	Modified	No	alpha	Yes	No	--	No	--	No
Hill (1989)	Global Aad	Borrowed	No	alpha	Yes	No	--	No	--	No
Hill (1989)	emotional	Borrowed	No	alpha	Yes	No	--	No	--	No
Homer (1990)	Aad	Unknown	No	alpha	Yes	No	--	No	--	No
Janiszewski (1988)	Ad eval.	Unknown	No	alpha	Yes	Yes	Yes	No	--	No
Kamins (1990)	Aad	Original	No	alpha	Yes	No	--	No	--	No
Kamins, et al. (1991)	Aad	Modified	No	alpha	No	No	--	No	--	No
Keller (1987)	Aad	Modified	No	alpha	Yes	No	--	No	--	No
Keller (1991a)	Aad	Borrowed	No	alpha	Yes	No	--	No	--	No
Keller (1991b)	Aad	Borrowed	No	alpha	Yes	No	--	No	--	No
Kilbourne (1986)	cognitive	Borrowed	No	alpha	No	No	--	No	--	No
Kilbourne (1986)	affective	Borrowed	No	alpha	Yes	No	--	No	--	No
Kilbourne, et al. (1985)	cognitive	Modified	No	alpha	No	No	--	No	--	No
Kilbourne, et al. (1985)	affective	Modified	No	alpha	Yes	No	--	No	--	No
Machleit & Wilson (1988)	Aad	Original	No	alpha	Yes	Yes?	Yes?	No	--	No
MacInnis & Park (1991)	Aad	Modified	No	alpha	Yes	Yes	Yes	No	--	No
MacKenzie & Lutz (1989)	Aad	Unknown	Yes	alpha	Yes	No	--	No	--	No
Macklin, et al. (1985)	Aad	Original	No	alpha	Yes	No	--	No	--	No
Madden, et al. (1988)	Ad eval.	Original	Yes	composite reliability	Yes	Yes	Yes	Yes	Yes	No
Miniard, et al. (1990)	Aad	Modified	No	alpha	Yes	No	--	No	--	No
Mitchell (1986)	Aad	Borrowed	No	alpha	Yes	No	--	No	--	No
Mitchell & Olson (1981)	Aad	Original	No	alpha	Yes	Yes	Yes	No	--	No
Muehling (1987)	Aad	Original	No	No	--	No	--	No	--	No
Muehling, et al. (1991)	Aad	Unknown	No	alpha	Yes	Yes	Yes	No	--	No
Okechuku & Wang (1988)	cognitive	Borrowed	No	alpha	No	No	--	No	--	No
Okechuku & Wang (1988)	affective	Modified	No	alpha	Yes	No	--	No	--	No
Olney, et al. (1991)	utilitarian	Original	Yes	alpha	Yes	Yes	Yes	No	--	No
Olney, et al. (1991)	hedonism	Original	Yes	alpha	Yes	Yes	Yes	No	--	No
Perrien, et al. (1985)	cognitive	Original	No	alpha	Yes	No	--	Yes	Yes	No
Perrien, et al. (1985)	affective	Original	No	alpha	Yes	No	--	Yes	Yes	No
Petroshius & Crocker (1989)	cognitive	Borrowed	No	alpha	No	Yes	Yes	No	--	No
Petroshius & Crocker (1989)	affective	Modified	No	alpha	Yes	Yes	Yes	No	--	No
Severn, et al. (1990)	Aad	Original	No	No	--	No	--	No	--	No
Yi (1990)	Aad	Borrowed	No	alpha	Yes	No	--	No	--	No
Zinkhan & Zinkhan (1985)	cognitive	Original	No	No	--	No	--	No	--	No

**TABLE 1**  
**PSYCHOMETRIC TESTING OF Aad SCALES**

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Zinkhan & Zinkhan (1985)	affective	Original	No	No	--	No	--	No	--	No
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