Dependence in Consumer Behavior Research: Exploring Measurement

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ABSTRACT
This paper proposes that healthy, normal dependency is a construct that would be valuable in consumer behavior research. The area of family life cycle research has always considered the very important implications of the dependent child but other areas of normal dependency have not been examined. Based on a survey of 97 undergraduate students, a dependency scale having three factors: social, financial and physical; is shown to have some value in predicting several recent purchases.

INTRODUCTION
Healthy normal dependence has perhaps not gained popularity as a construct of interest in consumer behavior research because it has historically been associated with abnormal or over dependence and codependent personalities. Only recently has dependency been “depathologized” as a concept and healthy dependency measures developed in psychology (Bornstein 1998). Exploring dependency as a meaningful underlying construct related to consumer behavior liberates the discussion from normative overlays of dependence within traditional frameworks such as the family life cycle. In addition to capturing the dependency found in provision for and in care of a child, a basic concept of dependence could be useful in understanding consumer behavior related to other relationships including but not limited to those with elders, pets, significant others, and even organizations. The purpose of this paper is to outline the aspects of dependency that might be incorporated into the study of consumer behavior and to explore one possible approach to measurement of dependency.

From a social policy perspective, dependency has been defined as “a state in which an individual is reliant upon others for assistance in meeting recognized needs” (Wilkin 1987, p. 868). Consumer behavior requires a broad based conceptualization of dependence, one that allows for all the variability found in normal behaviors and one that is flexible enough to encompass dependent relationships outside of human to human interactions. Memmi (1984) defines dependence as a relationship with a real or ideal being, object, group, or institution that involves more or less accepted compulsion and that is connected with the satisfaction of a need. He explains dependence as a trinitarian relationship where there are two partners and an object. Memmi contends that it is constructive to ask three questions about the trinitarian relationship: “Who is dependent? On whom? And for what?” (p.18). Before outlining the categories of dependency that might be considered in consumer behaviour research, it is useful to establish a theoretical jumping off point and that is the family life cycle research.

Family Life Cycle Research
The family life cycle has been a standard conceptual template in consumer behavior and marketing for decades. It is of interest here, in part because it has housed accounting of the influence of dependent children on family expenditures and constitutes the main contributions to our understanding of dependence and consumption. Due to space limitations, the history of the family life cycle will not be reviewed, rather, we will consider the most recent significant development, and that is argued to be the Gilly and Enis (1982) “redefined” modernized family life cycle. The model adds to the modernized model of Murphy and Staples (1979) the influence of timing of marriage and children, divorce/death and aging and results in the following 16 categories:

Under age 35 and single
Under age 35, married with no children
Under age 35, married with a child under six
Under age 35, married with a child six or older
Under age 35, divorced with no children
Under age 35, divorced with a child under six
Under age 35, divorced with a child six or older
Age 35 or older and single
Age 35 or older, married with no children
Age 35 or older, married with a child under six
Age 35 or older, married with a child six or older
Age 35 or older, divorced with no children
Age 35 or older, divorced with a child under six
Age 35 or older, divorced with a child six or older
Age 35 or older, retired and single
Age 35 or older, retired and married

Even those making strong past contributions to the literature on household life cycle stages (Wilkes 1995) now, readily admit that the concept is overly narrow (excluding for example, gays and lesbians, see Wilkes and Laverne 2002) and thus exclusionary. Moreover, extrapolations of the original idea are not parsimonious and it could be argued that the family life cycle is declining in explanatory usefulness as fewer and fewer households are constituted as traditional families.

Development of a dependency construct in consumer behavior research offers several advantages over the family life cycle (authors working paper, 2005) including (1) movement away from the terminology of “stages” and “cycles” which did not receive universal support even when it applied to majority of living arrangements (Murphy and Staples 1979); (2) recognition of multifarious dependencies such as present in relationships with significant others, elders and organizations; (3) acknowledgement of the increasing complexity of living arrangements in terms of both their constitution and duration; and (4) potential reinvigoration of a research area that has declined and become repetitive (Commuri and Gentry 2000). Moreover, development of a dependency construct would allow a move away from defining the behavior of groups of individuals as “non-traditional” (and thus “other”) as contrasted to a historical and dwindling mainstream.

Categories of Dependence
As a starting point, three broad categories of dependency are offered here as those which encompass the spectrum of human dependence:

Financial/Economic—This type of dependence is mainly concerned with the provision of tangibles and commercially available services. Financial dependence is a more individual (micro) concept whereas economic dependence is a more societal (macro) concept. From the financial dependence perspective, the United States Internal Revenue Service (1996), states that a dependent must be a live relative (by blood or marriage) without sustaining income for which the claimant provided over half the person’s support in the previous year. Support includes food, a place to live,
clothing, medical and dental care, and education. For the purposes of consumer behavior researchers, dependents need not be blood or marriage relatives but financial dependence is characterized by the provision of the support discussed by the IRS. From the economic perspective, ideas such as the company town (towns with one dominant employer), urban decay and rural poverty create types of dependence that strongly influence consumer behavior. For example, residential segregation has been associated with the development of an American underclass which experiences among other things welfare-dependence (Massey 1990). From the macro perspective, individuals are dependent on the overall business climate, the value of their currency, and the success and failure of public policies at the broadest level.

Physical/Time- Physical dependence of a general nature has seen very little research within consumer behavior. Research on consumers with disabilities was inspired by the 1990 US Americans with Disabilities Act (Kaufman 1995) but prior to that, consumer behaviors of the disabled or physically dependent received only tangential mentions. For example, Gelb (1978) found that retirement age shoppers value retail store promotions that consider their physical limitations (e.g., offering early opening hours so that they can avoid crowded shopping situations). In particular, the relationship between marketing and the physically disabled (e.g., Burnett 1996; Mueller 1990) and the challenges faced by individuals with particular disabilities (e.g., visual impairments; Baker, Stephens and Hill 2001) have been examined. However, given their focus on disabilities, these studies particularize physical dependence rather than develop general applicability of the concept.

Time is grouped here with physical dependence in that the single most important aspect of physical dependence is time as the dependent object. Unlike physical dependence, a great wealth of literature and theory on time use is available and important links to consumer behavior have already been made (e.g., Jacoby et al. 1976, Hornik 1982; Kolodinsky 1990). Over several decades of research the concept of time has moved from having a primarily economic meaning (family production variable) to conceptualizations as a constraint (as in “time pressure,” Suri et al. 2003) and “timestyles” (Cotte, Ratneshwar and Mick 2004) and to consideration of polyphonic time use (Kaufman, Lane and Lindquist 1991; Linquist and Kaufman-Scarborough 2004).

Psychological/Social-Psychological and social dependence has the richest literature from which to draw. Bornstein (1993) found more than 500 published studies examining the antecedents, correlates, and consequences of dependent personality traits in children and adults. Even though a great deal of literature may focus on abnormal aspects of psychological and social dependence, almost all aspects of these dependencies have less extreme, normal counterparts. For example, Hirschfeld et al. (1977) defined the interpersonal dependence found in the normal adult personality structure as follows.

Interpersonal dependence is a complex of thoughts, beliefs, feelings, and behaviors which revolve around the need to associate closely with, interact with, and rely upon valued other people. The thoughts concern views of self and one’s relationships with others. The beliefs pertain to the value one places on friendship, intimacy, interdependency, etc. The feelings include both positive and negative emotions. The behaviors seek to maintain interpersonal closeness, for example, by being ‘pleasant,’ giving or requesting advice, or helping others (p. 610).

In psychology, Bornstein and Languirand (2003) have considered dependency as a full spectrum ranging from destructive overdependence to healthy dependence (they also consider dysfunctional detachment). Destructive overdependence is characterized as maladaptive and inflexible dependency whereas healthy dependency is characterized as flexible, adaptive and help- and support-seeking (Bornstein et al. 2003). The focus of Bornstein and his colleagues is on the person and the personality, the ability of an individual to form a healthy dependent relationship.

Given the macro nature of economic dependence, and the potential overlaps of social with psychological dependencies, and time with physical dependencies, this first attempt at measurement was limited to financial, social and physical dependence. The following sections describe development and testing of a scale to capture these three dimensions of dependency.

Measurement

The survey instrument had three sections. The first of these asked respondents about themselves and included a question regarding their family life cycle stage as measured by the 16 categories found in the Gilly and Enis work (1982). This question offered the life cycle categories as response alternatives but also allowed respondents the opportunity to explain if they felt that their current household situation was not described in those categories offered. The second section asked respondents a series of questions regarding particular purchases made in the last year and others made in the last month drawn from Wilkes (1995). The third section contained a battery of five-point semantic differential questions each anchored by “strongly agree” and “strongly disagree”. These items were developed following the “item pool” as suggested by Churchill (1979). After a large number of items were generated by the authors, they were reviewed by six students in a PhD seminar in consumer behaviour for their wording and responsiveness to the categories outlined. This section included a reduced set of eight items tapping financial dependence, eight items designed to capture physical dependence and seven items measuring social dependence. These items are shown in Appendix A.

Study Participants

Undergraduate students at a large state university attending introductory marketing and consumer behaviour classes were invited to participate in the study. Participation was voluntary and students were not compensated for their participation. They were debriefed regarding the study objectives after participation. Overall, nearly 60% of the respondents were female, and the majority were between the ages of 20 and 24 (75%). A total of 97 surveys were distributed and all were deemed usable in the analysis.

RESULTS

Not surprisingly, 87% of this student sample reported that their family life stage was that of “Under age 35 and single.” This suggests a high degree of homogeneity amongst study participants, at least as far as traditional measures are concerned. Since the remaining responses were distributed amongst the Gilly and Enis categories, it also suggests that the stages approach could distinguish few differences in this particular sample.

Overview of the Data Analyses

Research questions were addressed via two categories of analysis. First exploratory and confirmatory factor analyses were conducted in order to develop an appropriate dependency scale. Second, logistic regression was employed to determine the predictive ability of dependency factors on purchasing behaviours.
SPSS 13.0 was used to conduct an exploratory factor analysis on the student sample (N=97) to determine how the various dependency items loaded onto factors. An oblique rotation using principal axis factoring extraction was requested. Investigation of the pattern matrix identified the variables that loaded onto the three factors at a level above .5. Descriptive statistics and correlations relating to factors are displayed in Table 1.

Using AMOS 5.0 (Arbuckle 1986), a confirmatory factor analysis (CFA) was conducted to further assess the fit of the exploratory model to the data (Anderson and Gerbing 1988). Issues relating to sample size, normality of data, and missing data are addressed. Initially, maximum likelihood (ML) estimation was employed in the analysis. Indeed, reliable estimates have been obtained by ML estimation based on sample sizes as low as 50 (Gerbing and Anderson 1985). This method assumes normality of the data which was an assumption that was violated in this sample (all variables: Shapiro-Wilk; p<.05). To ensure non-normal data did not influence the results, a Bollen-Stine bootstrap procedure (500 iterations) was employed. This analysis was not significant indicating that the chi-square indicator of model fit was not inflated. Lastly, missing data was inspected and considered to be missing at random. As per Allison (2002), an EM algorithm was used to replace missing data via MVA in SPSS. Fit indices relating to the CFA are displayed in Table 2 and indicate a reasonable fit of the model to the data based on conventions (Hu and Bentler 1999).

Predictors of Purchasing Outcomes

Several binary logistic regression analyses were performed to investigate the predictive ability of self-reported ratings of dependency on past purchasing outcomes. In all, 97 participants were surveyed, with missing data apparently randomly scattered amongst categories and subsequently listwise deleted (Tabachnick & Fiddel 1996). The independent variables proposed as important with respect to predicting purchasing outcomes were (a) social dependency, (b) financial dependency, and (c) physical dependency. Table 4 displays regression coefficients, standard errors, Wald statistics, significance levels, and confidence intervals for significant and near-significant predictors of purchase outcome variables. Table 5 shows base response rates for the behaviors examined.

## TABLE 1
Descriptive statistics and zero-order correlations

<table>
<thead>
<tr>
<th>Scale</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Dependency</td>
<td>3.50</td>
<td>.7438</td>
<td></td>
<td>.248*</td>
<td>.023</td>
</tr>
<tr>
<td>Financial Dependency</td>
<td>3.51</td>
<td>.93969</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Dependency</td>
<td>1.8118</td>
<td>.77088</td>
<td>-.044</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
* p<.05

## TABLE 2
Items and standardized estimates resulting from CFA

<table>
<thead>
<tr>
<th>Item</th>
<th>Standardised Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>I’m the kind of person that needs strong interpersonal relationships.</td>
<td>.96**</td>
</tr>
<tr>
<td>I need to have dinner with friends or family regularly in order to feel close.</td>
<td>.43*</td>
</tr>
<tr>
<td>I need strong social relationships.</td>
<td>.60**</td>
</tr>
<tr>
<td>From a financial perspective, I am not self-sufficient.</td>
<td>.71**</td>
</tr>
<tr>
<td>I am receiving financial support.</td>
<td>.68**</td>
</tr>
<tr>
<td>I do not have financial independence.</td>
<td>.83**</td>
</tr>
<tr>
<td>I look forward to the day when I am financially independent.</td>
<td>.54**</td>
</tr>
<tr>
<td>Because of a physical condition, I must often depend on others for help</td>
<td></td>
</tr>
<tr>
<td>Getting out and about is difficult for me.</td>
<td>.79**</td>
</tr>
<tr>
<td>With regard to my personal care, there are some things I can’t do without help.</td>
<td>.59**</td>
</tr>
<tr>
<td>Coefficient alpha</td>
<td>.65</td>
</tr>
<tr>
<td>Highest item SMC</td>
<td>.926</td>
</tr>
<tr>
<td>Lowest item SMC</td>
<td>.180</td>
</tr>
</tbody>
</table>
|| ** Significant at p<.001
| * Significant at p<.01

Scale Development

SPSS 13.0 was used to conduct an exploratory factor analysis on the student sample (N=97) to determine how the various dependency items loaded onto factors. An oblique rotation using principal axis factoring extraction was requested. Investigation of the pattern matrix identified the variables that loaded onto the three factors at a level above .5. Descriptive statistics and correlations relating to factors are displayed in Table 1.

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From Tables 4 and 5 we can see that while the models did not improve our prediction over the base rates, the models do tell us something about the dependencies influencing the reported behaviors.

**Purchase of dinner in a restaurant in the past month**. A test of the full model with the predictors (social, financial, and physical dependency) against a constant-only model was statistically reliable, $\chi^2(1, N=96)=37.37, p<.001$, indicating the set of predictors reliably distinguished between students that had or hadn’t purchased dinner at a restaurant in the month prior to completing the survey. Prediction success was 85.4%.

According to the Wald criterion, both social and physical dependency predicted dinner purchasing outcomes. First, higher levels of reported social dependency significantly predicted the purchase of dinner in a restaurant in the last month, $z=8.27, p<.010$. Conversely, higher self reports of physical dependency significantly predicted not purchasing dinner in a restaurant in the last month, $z=8.65, p<.010$.

**Purchase of dry cleaning services in the past month**. Testing the intercept-only model was statistically significant, $\chi^2(1, N=96)=38.66, p<.001$. Prediction success was 85.4%. As per Table 4, those reporting higher perceived levels of social dependency were significantly more likely to purchase dry cleaning services in the month prior to surveying, $z=6.67, p<.05$.

**Purchase of an automobile in the past year**. Based on automobile purchase, full model analysis with all predictors against the constant-only model was statistically significant, $\chi^2(1, N=94)=38.66, p<.001$. Prediction success was 87.2%. Overall, this analysis showed that higher self levels of physical dependency neared significance in the prediction of an automobile purchase in the past year, $z=3.562, p=.059$ (see Table 4).

**Purchase of lawn or power tools in the last year**. Analysis of the intercept-only model was statistically significant, $\chi^2(1, N=95)=40.98, p<.001$ with an overall prediction rate of 89.5%. Whilst a marginal result, the results revealed that higher self-reported levels of social dependency neared significance in the prediction of purchases relating to lawn or power tools in the past year: $z=3.108, p=.078$ (see Table 4).

**DISCUSSION AND CONCLUSION**

While only a first empirical examination of the potential value of a dependency measure in consumer behavior, the scale, or at least the idea of development of a scale of dependency, must be considered viable and potentially useful. A reasonably well estimated set of three factors was shown to have some predictive value within a relatively homogenous sample. Particular prediction of recent
consumer behaviors was not our objective in this study, rather, prediction was only utilized to support the usefulness of the scale and thus only purchases of potential interest to the sample were considered. Although the research could be criticized for using a student sample, the use of this sample actually represents a strong test of the potential value of such a measure since the student sample offers so little variance.

Development of a dependency construct in consumer behavior has been positioned as a possible alternative to the analysis of household or family life cycle but it is also the case that this type of measure might work well within that paradigm. The more important value, however, is the potential to dispense with the “traditional versus non-traditional” distinction, especially when each particular “non-traditional” group (e.g., gays, lesbians, single fathers, displaced homemakers, committed pet owners, returning adult children, elder care-givers) is treated as unique and isolated. The challenges faced by individuals often emanate from some of the same central dependencies.

REFERENCES


Bornstein, Robert F. (1993), The Dependent Personality, New York: Guilford.


Bornstein Robert F. and Mary A. Languirand (2003), Healthy Dependency, New York: Newmarket.


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**TABLE 5**

Base response rates to purchase behavior questions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase of dinner in the last month</td>
<td>82</td>
<td>14</td>
</tr>
<tr>
<td>Purchase of dry cleaning services in the past month</td>
<td>20</td>
<td>76</td>
</tr>
<tr>
<td>Purchase of automobile in the past year</td>
<td>12</td>
<td>82</td>
</tr>
<tr>
<td>Purchase of power tools in the last year</td>
<td>10</td>
<td>85</td>
</tr>
</tbody>
</table>
APPENDIX A
Items Measuring Dependency in Three Areas

Social
Every once in a while I just need to get out with a group of friends.
I prefer to be by myself. (R)
I need strong social relationships.*
Before I plan a social event, I usually ask my friends for advice.
I need to have dinner with friends or family regularly in order to feel close.*
I am the kind of person that feels alone if I do not get to socialize regularly.
I am the kind of person that needs strong interpersonal relationships.*

Financial
I make my own money.
I support myself financially.
I do not rely on anyone for financial support. (R)
I have to rely on others financially.
From a financial perspective, I am not self-sufficient.*
I am receiving financial support.*
I look forward to the day when I am financially independent.*
I do not have financial independence.*

Physical
Physically, I am able to go and do easily. (R)
I have a physical dependency.
I often have to rely on others to get where I need to go.
I often must ask others to help me do things around the house.
Because of a physical condition, I often times must depend on others for help.*
With regard to my personal care, there are some things that I can’t do without help.*
Getting out and about is difficult for me.*
I really don’t have any physical limitations. (R)

* Items retained in scale development.