

# Testing a Model of Mother-Daughter Identification<sup>1</sup>

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When describing issues pertinent to research and women's health, McBride (1987) noted that it is important to study healthy, normative behaviors in women to better understand what facilitates their health. Because the mother-daughter relationship is pivotal for the development of a woman's identity (Chodorow, 1978; Gilligan, 1982) and, therefore, for a healthy self-concept, nurses interested in caring for women need to learn about the mother-daughter relationship and, in particular, the identification process that occurs within it (Boyd, 1985).

The purpose of this investigation was to provide empirical support for a theoretical model of mother-daughter identification, a model that includes the concepts of attachment, conflict, and mother and daughter identities.

## IDENTIFICATION AND IDENTITY FORMATION

Freud (1933) was the first to theoretically discuss the phenomenon of identification. Freud believed there were two motivational reasons for identification: fear of loss of love and fear of retaliation. Daughters, he felt, were more likely to engage in anaclitic identification (fearing loss of love) while sons engaged in defensive identification (fearing retaliation). Frieze, Parsons, Johnson, Ruble, and Zellman (1978) interpreted Freud by stating: "In the absence of defensive identification, the girl continues her original anaclitic identification with her mother. Fear of loss of mother's love remains her primary motivation for adopting sex role behaviors and attitudes" (p. 99). Hence a daughter's identification is linked to her attachment and her fear over losing the source of this attachment.

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Since one's first identification is "built on the strength of attachment" (Gaylin, 1976, p. 100), many believe that feelings of attraction and/or attachment are critical to the mother-daughter identification process (Boyd, 1985; Chodorow, 1978) and the identity formation that occurs from that identification. In Western culture, where the mother usually raises the children, the daughter has the presence of her mother for longer periods of time than the son has the presence of his father. This prolonged contact with her same-sex parent facilitates a daughter's personal identification with her mother (Chodorow, 1974). Since personal identification (as contrasted to a son's positional identification) is related to the development of personality (Winch, 1962), and because it is based on the identifier's more intimate knowledge of the model, daughters are more often perceived as "like" their mothers than sons are "like" their fathers (Chodorow, 1978).

However, it is not just daughters who identify with their mothers; mothers also identify with their daughters (Chodorow, 1978; Eichenbaum & Orbach, 1983; Fischer, 1983; Gilbert & Webster, 1982; Greenspan, 1983; Neisser, 1973). A mother relives, through her daughter, both her own childhood and her own mother's identity—becoming "her own mother and her own child" (Hammer, 1976, p. 26). Chodorow (1978) noted that "mothers experience daughters as one with themselves" (p. 195), an observation that leads one to hypothesize the presence of a dyadic mother-daughter identity as well as each woman's individual identity.

The lack of separation or psychological distance within this dyad often leads to three different facets of mother-daughter identification: First, it leads to the potential for high levels of attachment and connection; second, the lack of separation often spawns periodic conflict over the daughter's individuation and separation struggles; and third, the intensity and mutuality of their identification often allows for a merging of self-concept into a dyadic identity.

#### ATTACHMENT WITHIN THE MOTHER-DAUGHTER RELATIONSHIP

Drawing from attachment literature (e.g., Bowlby), Thompson and Walker (1984) defined attachment, as it occurs between mothers and daughters, as the "emotional dependence on a specific person, a preference for the person relative to others, and a need for access or proximity to the person" (p. 314). Using their 9-item Attachment Scale (Thompson & Walker, 1984), they examined the relationship between aid patterns and attachment in three

generations of mothers and daughters. Attachment within the mother-daughter dyad was found to be related to assistance provided within the dyad, although aid patterns affected attachment differently, depending on the generation. Attachment and emotional closeness within the mother-daughter relationship was found within several cultures (Chodorow, 1978; Dubish, 1977; Neisser, 1973; Wilmott & Young, 1957), although cross-culturally, matrilineal descent, stress, workload, industrialization, and education were not associated with mother-daughter attachment (Neisser, 1973).

Research using mother and daughter samples shows that a mother and her daughter share an interdependent (Cohler & Grunebaum, 1981; Lang & Brody, 1983), rewarding (Baruch & Barnett; 1983), intimate (Thompson & Walker, 1987), mutual (Bromberg, 1983) and attached (Fischer, 1986; Hammer, 1976) relationship which appears to move through several transitions (Berti, 1981; Cohler & Grunebaum, 1981; Fischer, 1986), particularly when the daughter becomes a wife and mother (Cohler & Grunebaum, 1981; Fischer, 1986). Daughters and mothers often assisted each other (Suitor, 1987; Thompson & Walker, 1984; Walker & Thompson, 1983), and as mothers grow older, daughters frequently provided for their mothers' care (Fischer, 1986; Troll, 1971; Troll & Smith, 1976).

### CONFLICT WITHIN THE MOTHER-DAUGHTER RELATIONSHIP

According to Lerner (1985), a woman's greatest anger usually occurs within the context of her familial roles. A woman comes to motherhood as a daughter whose conflicts over separation are often passed to her own daughter (Flax, 1981); hence both women experience the conflicts over separation. Among adult mothers and daughters, it has been reported that a mother's and her daughter's perception of conflict (within the relationship) tends to be correlated ( $r = .44, p = .000$ ), although daughters reported significantly more conflict within their mother-daughter relationships,  $t(79) = 4.60, p < .000$  (Boyd, 1987). However, when responding to open-ended questions, 80% of a random subsample ( $n = 20$  dyads) reported having a good to excellent mother-daughter relationship (Boyd, 1987).

Bromberg (1983) also found that a daughter's perception of the past mother-daughter relationship was less positive than her mother's. However, Bromberg concluded that although conflict was present, it did not appear to define the relationship. These findings lend support to the tenet that even in good relationships, conflict is normative and that daughters, due to separation

needs, tend to experience greater tension within the relationship (Boyd, 1989).

### MOTHER-DAUGHTER IDENTIFICATION

In a previous work, the investigator (Boyd, 1985) discussed the antecedents and empirical indicators of the mother-daughter identification construct; this study is based on this earlier theoretical work. Drawing from psychoanalytically based accounts of same-sex identification, Boyd (1985) postulated that while attraction toward one's mother is a necessary precursor to the mother-daughter identification process, this identification process is observed when mother and daughter show evidence of mutual influence and shared identities. It was also noted that mother-daughter conflict over separation and perceived differences is a normal part of the mother-daughter identification process (Boyd, *in press*), and conflict can be observed in the arguments and tensions reported within the relationship. This construct of mother-daughter identification was discussed in relation to Rogers's (1970) conceptual model, since it was suggested that the conceptualization of this mother-daughter identification was consistent with her views of human-environmental field process (Boyd, 1985).

In past theoretical descriptions of the concept of identification, the identification process was discussed as a unidirectional process—the child was changed by internalizing characteristics of his or her parent (Lynn, 1961, 1981)—but changes in the parent's identity were not discussed. However, by adding Rogers's (1970, 1983) ideas regarding human-environmental field integrality to these past formulations, the concept of mother-daughter identification was reformulated within a nursing perspective (Boyd, 1985). Consistent with theories about mothers and daughters and human-environmental field process, it is not only the daughter's identity that is affected by the identification process but also the mother's identity.

Mother-daughter identification, as a construct reformulated within Rogers's nursing model, can be defined as the unique process whereby identities of mother and daughter become integral. It is the continuous, mutual human-environmental field process where a mother and her adult daughter engage in the mutual internalization of real or imagined characteristics of the other into inner interactions or characteristics. These characteristics become part of their individual as well as their dyadic identity. Attachment and conflict are important aspects of this process in that the lack of

psychological distance that occurs in this relationship contributes to high levels of attachment as well as conflict over intradyadic differentiation.

## HYPOTHESIS

It was hypothesized that within the theoretical model of mother-daughter identification, daughter's attachment to her mother, mother and daughter conflict, and the identity of the dyad will be intercorrelated as depicted in Figure 1.

### Operational Definitions

*Daughter's attachment to her mother* theoretically is a daughter's emotional dependence on, and need for access to, her mother. Daughter's attachment was operationally defined as the adult daughter's summative score on the Thompson and Walker (1984) Attachment Scale. High scores were indicative of high attachment to mother.

*Mother and daughter conflict* was defined as the mother's or daughter's perception of tension and/or conflict within the mother-daughter relationship. Conflict was operationally defined as mother's or daughter's summative score on the Mother-Daughter Conflict Scale. High scores were indicative of high perceived conflict.

*Dyadic identity* was defined as mother-daughter self-concept whereby aspects of mother and daughter identities are shared, creating a dyadic identity as well as each woman maintaining an individual one. There are two indicators of dyadic identity: mother's identity and daughter's identity. Identity indicators operationally were defined as the sum of the identity, self-satisfaction, behavior, physical self, moral-ethical self, personal self, family self, and social self subscores on the Tennessee Self Concept Scale (Fitts, 1964).

## METHODS

### Design

This study used an ex post facto, correlational design. Since the mother-daughter relationship is believed to be culturally mediated (Chodorow,

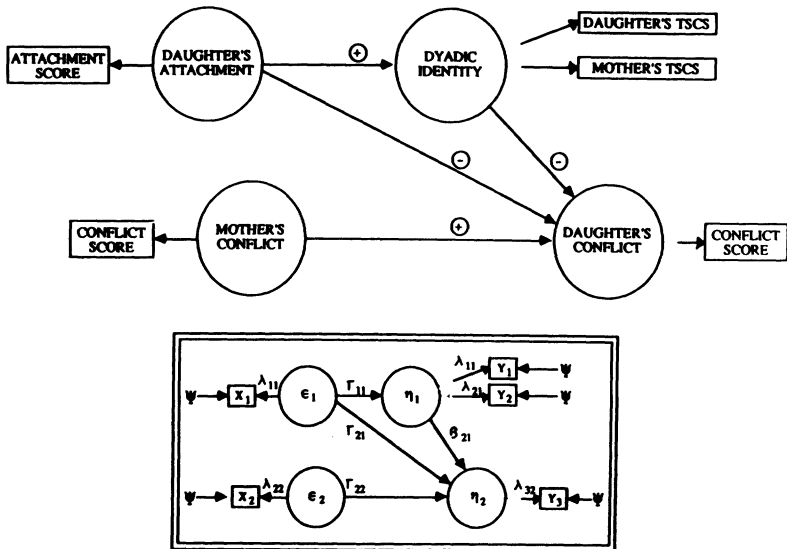


Figure 1: Hypothesized model of mother-daughter identification with its corresponding measurement model (inset).

1978), cultural homogeneity of the sample offered an important control on the mediating effects of culture on the relationship. Polish-American women were selected as the study population because in the past, the Polish-American communities have maintained a self-imposed form of isolation (Radzialowski, 1974). Therefore, this group of women was expected to be more culturally homogeneous than the general population of North American women.

**Sample**

A nonprobability, convenience sample of 162 first-, second-, third-, and fourth-generation Polish-American women was used. Over a 4-month period in 1986, 110 dyads (220 women) answered local advertisements and requested that questionnaires be mailed to them. Of these, 81 dyads (162 women) returned the questionnaires by mail for a dyadic return rate of approximately 73%. These 81 dyads became the study sample. Each woman received \$5.00 for participating in the investigation.

A demographic data form was developed specifically for this investigation. Demographic data were collected for the purpose of describing the sample.

Of the mothers in the sample, 73% were first-generation Polish-American and 97% were Roman Catholic. The mean age for the mothers in this sample was 65 years, although their ages ranged from 51 to 81 years. These women had an average of 3.6 children. Sixty percent had husbands who were living and 26% were currently employed.

Daughters' ages ranged between 29 and 46 years, with the mean age being 36 years. Of the daughters in the sample, 71% were currently married and had an average of 1.7 children. As to religious affiliation, 91% were Roman Catholic; 69% were currently employed.

These mothers and daughters had frequent contact with one another. Among these dyads, 43% spoke with each other daily, 32% spoke with each other weekly, and 43% visited each other weekly. Only 11% of the women lived out of state, while 68% lived in several adjacent communities known to contain large numbers of Polish-American families. Since Polish-American families tend to be close-knit, with mothers responsible for child rearing, the frequent contact between mothers and daughters may reflect Polish family values and not be reflective of the quality of the mother-daughter relationship. Future research will need to examine this issue in greater depth.

### **Instruments**

Each participant completed a questionnaire packet that contained six instruments: the Semantic Differential Scale, and open-ended questionnaire, the Attachment Scale, the Mother-Daughter Conflict Scale, the Tennessee Self-Concept Scale, and a demographic data form. The Semantic Differential Scale and the open-ended questionnaire were not used in the present analysis.

The Attachment Scale developed through factor analysis by Thompson and Walker (1984) is a 9-item, 7-point scale which represents a series of statements about the mother and daughter relationship. Items were summed and averaged so as to create an individual score. Internal reliability (Cronbach's alpha) ranged from .86 to .91 (Thompson & Walker, 1984).

The Mother-Daughter Conflict Scale is an 8-item scale representing a series of statements about the mother-daughter relationship. Three of these items came from a factor-analyzed intergenerational study done by Walker (personal communication, September 30, 1985). These items were included

**TABLE 1: Parameter Estimates**

<i>Parameter</i>		<i>Standardized Coefficient</i>	<i>t Ratio</i>
$\beta_{21}$	(Dyad identity/Daughter's conflict)	-.350	-1.74
$\tau_{11}$	(Daughter's attachment/Dyad identity)	.181	.83
$\tau_{21}$	(Daughter's attachment/Daughter's conflict)	-.378	-3.58
$\tau_{22}$	(Mother's conflict/Daughter's conflict)	.372	4.30
$\lambda_{11}$	(Daughter's identity)	.894*	—
$\lambda_{21}$	(Mother's identity)	.24*	—

\*These lambdas are analogous to reliability coefficients.

because they represented tension and disclosure factors in her study and were believed to be relevant to the measure of conflict.

The possible range on each item was from 1 to 7. Items were summed and averaged so as to create an individual score. Cronbach's alphas were computed on this study sample: For daughters, the alpha coefficient was .82, but for mothers, .67. This inconsistency may be due to a social desirability threat operating for the mothers. In the future, this instrument needs further refinement.

The counseling version of the Tennessee Self-Concept Scale (Fitts, 1964) is a self-administered scale which consists of 100 self-descriptive items. Items on the scale were written to include many aspects of self; each aspect received a subscore. This scale was normed on 626 persons of varying ages, sex, race, and socioeconomic status. Over a 2-week period, the test-retest reliability of the total score was .92.

### Data Analysis

Data analysis using the LISREL VI (Jöreskog & Sörbom, 1984) program was conducted to examine the fit between the hypothesized model and the data. LISREL, or Analysis of Linear Structural Relationships, provides maximum likelihood estimates of the unknown parameters within structural equation (causal) models (Pedhazur, 1982). It can accommodate reciprocal relationships as well as multiple indicators for latent variables. LISREL analysis is a particularly useful technique when one is engaged in construct or theory development (Ladewig & McGee, 1986).

A LISREL program allows a researcher to examine several indicators of overall fit between a hypothesized model and the data. LISREL also provides



indications of the direction and strength of the individual relationship specified within the structural equation model as well as to evaluate the quality of the measurements. Last, LISREL estimates the amount of error variance for both the observed and unobserved variables and provides a total coefficient of determination for the model.

In this study, LISREL analysis was only performed on completed dyads. Therefore, the coefficients specifically calculated for the structural equation model were determined from an *N* of 79 dyads (158 women).

## RESULTS

### Model/Data Fit

Jöreskog and Sörbom (1984) recommended that a relative likelihood ratio (RLR) based on the chi-square values in relation to degrees of freedom, be used as an evaluation of model and data fit. This ratio is thought to be an indicator of how the proposed model matches with an alternative, unconstrained model. One looks at the ratio between the chi-square and the degrees of freedom. Ratios approximating 2 to 1 or 3 to 1 are considered indicative of a good fit (Carmines & McIver, 1981). Furthermore, unlike other uses of the chi-square measure, it is better to have a nonsignificant probability, since a statistically significant chi-square would mean that the model fails to account for the covariances among the variables (Acocck & Yang, 1984). In this study, LISREL calculated the chi-square to be 5.92 with 4 degrees of freedom. The probability was .205. Hence, by applying the RLR measure of model/data fit, there appears to be congruence between the hypothesized model and the data.

The Goodness of Fit Index (GFI) and the Adjusted Goodness of Fit Index (AGFI) also indicate how well the data fit the model. The GFI is a measure of the "relative amount of variance and covariance jointly accounted for in the model" (Jöreskog & Sörbom, 1984, p. 1.40), while the AGFI is simply the GFI that has been adjusted for degrees of freedom. As a measure of relative fit, the GFI is independent of sample size and robust to departures from a normal distribution (Jöreskog & Sörbom, 1984).

The GFI for the hypothesized structural equation model of mother-daughter identification was .972 (AGFI = .894). Generally, any GFI and AGFI in the 90s are considered to indicate a good fit. Using this measure of model/data fit, there again appears to be a match between the hypothesized model and the data.

### Structural Parameters Within the Model

Table 1 shows the standardized coefficients for each pathway within the model (shown in Figure 1). These should be interpreted as one would interpret a path coefficient. These standardized coefficients support the hypothesized signs within the model and support, although at times weakly, the individual pathways suggested by the model. The weakest path is the gamma pathway between the attachment and identity variables. The hypothesized relationships within the structural equation model, indicated by arrows in Figure 1, were examined for significance with the *t* statistic. Any *t* values larger than 2.0 are generally considered to be significantly different from zero and therefore significant (Jöreskog & Sörbom, 1984). Table 1 shows the parameter estimates for this model. Only two pathways have parameters above 2.0, however, the beta path, although not significant (*t* value = -1.74) revealed a trend in the hypothesized direction. As indicated in Table 1, several of the relationships within the model were strong and significant.

In Table 1, the lambdas are also provided for dyadic identity construct. Lambdas designate the link between manifest and latent variables and may be viewed as factor loadings. As such, when there is more than one indicator of the latent variable, lambdas are analogous to reliability coefficients. Since the exogenous, latent variables in the model (Figure 1) have only one indicator each, their lambdas are set at 1.0 prior to analysis (under the assumption that each single indicator is a reliable measure of the latent variable). However, as seen in Table 1, the lambdas for dyadic identity are notably disproportionate, indicating a problem with the manifest variables chosen to represent the dyadic identity construct.

Table 2 shows the explained variance for the measured indicators of the endogenous variables. As indicated in this table, the daughter's conflict, as compared to dyadic identity is the more powerful endogenous variable, explaining almost .46 of the variance among its relationships. Furthermore, analysis revealed that a daughter's identity—when compared to the manifest variable, a mother's identity—was a much better indicator of the latent dyadic identity variable (with the squared multiple correlations for these indicators being .79 and .06, respectively). This disproportionate accounting of variance indicates that a daughter's identity contributes more to the dyadic identity construct than does a mother's identity. This is a problem that, in the future, may required theoretical attention and model revision.

In summary, based on the relative likelihood ratio, the high goodness-of-fit index and the noteworthy explained variance of the daughter's conflict variable, good empirical support was provided for the study hypothesis and, as such, the theoretical model.

TABLE 2: Squared MR's for Structural Equations

	<i>Value</i>
Coefficient <i>R</i> (Daughter's conflict)	.675
<i>R</i> <sup>2</sup> (Daughter's conflict)	.456
Coefficient <i>R</i> (Dyad's identity)	.173
<i>R</i> <sup>2</sup> (Dyad's identity)	.030
Total coefficient of determination for all structural equations	.358

## DISCUSSION

Attachment, conflict, and identity have been postulated to be important aspects of mother-daughter relationships and as such, of the mother-daughter identification process. However, until this study, a model of mother-daughter identification (Boyd, 1985) had not been tested. Based on a theoretical model of mother-daughter identification, an a priori structural equation model was tested. The results were supportive of the model.

However, an analysis of the individual parameters revealed several weaknesses, specifically with regards to the dyadic identity variable. The parameter estimates for the structural equation model revealed that the relationship between a daughter's attachment and dyadic identity was weak and nonsignificant ( $\gamma = .181$ ;  $t$  ratio = .83). Clearly, dyadic identity, either as it was conceptualized within the model or as it was measured, was problematic.

This problem with the dyadic identity construct could be explained in several different ways. It may be a theoretical problem. Although there appears to be theoretical support for the conceptualization of an integral mother-daughter identity, it may be that this is a theoretically inaccurate interpretation of the shared "likeness" that is so often noted between mothers and their daughters. Or alternately, the conceptualization of dyadic identity may have been accurate, but the operationalization could have been the problem. Since two individual identities were combined to indicate the concept of dyadic identity, it is probable, and theoretically quite likely, that the concept of dyadic identity is more complex than the summing of its parts. Therefore, it cannot be accurately measured by combining two identity scores. If this is the case, then a new instrument needs to be developed which accurately measures the integral nature of mother-daughter identities. In the

future, this integral aspect of mother-daughter identification needs further theoretical and operational attention.

The weak, nonsignificant relationship between the daughter's attachment and the dyadic identity construct may also be related to the operationalization of daughter's attachment. Thompson and Walker's (1984) Attachment Scale, developed through factor analysis, may not be a valid measure of attachment. Their research, although contributing to current knowledge of mothers and daughters, is somewhat limited due to convenience sampling and the relatively young age of daughters. Further, they did not use theories specifically addressing the mother-daughter relationship to guide their hypotheses and/or instrument development. Perhaps a different measure of identification needs to be found.

A selection threat may have existed in the proposed design. It may have been that only mothers and daughters who perceive their relationships as "good" volunteered for this study, thereby providing a biased sample. Although most of the dyads reported their relationships to be very good, the women were relatively open in their written answers about the conflicts and tensions within the relationships. In future studies, a larger random sampling plan may correct this threat. However, there may always be a tendency for those having problems within their relationships not to enter a study of this nature.

The results of this study should not be overgeneralized to a larger, more ethnically diverse population; only inferences from the data to the study population can be made. Further, this model does not capture the developmental changes that may occur in the life span of this dyad nor can this model automatically be applied to younger or older mother-daughter relationships. However, the hypothesized model of mother-daughter identification has empirical support and, therefore, it is useful in that it advances knowledge about the normal mother-daughter relationship.

## CONCLUSION

Although in this study there was evidence of model/data fit, the hypothesized model only explained approximately .36 total variance in the endogenous variables. This indicates that there are other effects, not included in this model, that also impact on the endogenous variables. Additionally, the problems mentioned earlier with the dyadic identity construct could also affect the coefficient of determination. Future work with the theoretical model should include the addition of variables believed to influence identity

and conflict within the mother-daughter relationship as well as a theoretical and operational reworking of the dyadic identity concept.

## NOTES

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## Commentaries

### Commentary by Eggert

Boyd's area of research is important; it can be situated in the study of personal relationships, an interdisciplinary science (cf. Duck & Gilmour, 1981, 1983) with regular advances published in the *Journal of Personal and Social Relationships*. Nurse scientists can make significant contributions to the considerable legacy from social psychology, ethology, sociology, social anthropology, and the helping professions. Boyd's work, in particular, could advance the science by testing boundary conditions of existing dynamic theories of relationship development in context. Indeed, underresearched areas are personal relationships in social context other than romantic ones—such as adult mother-daughter relationships. Moreover, the interplay among dyadic constructs, such as shared identity, attachment, and conflict, are included in most extant relationship theories. Thus Boyd's work has broad appeal for using structural equation modeling for theory testing. Hence, in my commentary, I assess Boyd's work relative to standards for structural equation modeling and existing theory.

Structural equation modeling (or causal modeling with multiple indicators of latent variables) provides a promising way of forging ahead with the difficult task of linking theory construction with theory testing. This methodologic paradigm has two major strengths: conceptual and technical. Conceptually, it requires a mode of thinking that facilitates more exact statements of theory, greater precision in testing theory, and more thorough understanding of the data. Technically, it assesses both the adequacy of measurement and estimates the structural relationships among unobservable constructs; it precludes technical sophistication with related statistical methods and programs (Bentler, 1980; Blalock, 1969, 1982, 1985; Costner, 1985; Long, 1976, 1983).

In short, LISREL and EQS programs, developed respectively by Jöreskog and Sörbom (1983) and Bentler (1985), permit researchers to link theory construction with theory testing. However, this requires (a) specifying a theoretic model in which hypotheses link latent theoretic constructs one to another (termed the structural model); (b) specifying an auxiliary measurement theory consisting of correspondence rules linking theoretic constructs to derived empirical concepts, given meaning through hypothesized manifest indicators (termed the measurement model); and (c) testing these models with an appropriate sample size. (Costner recommends a minimum of 200 and, preferably, 400 to 1,000 subjects to test models on a random half of the data, verifying the estimated models on the other half.)

The aforementioned standards reveal shortcomings in Boyd's work. First is the inadequate sample size of 79, one far too small for using LISREL. This small sample favorably biases the fit statistics (e.g., we know that chi-square is not a good fit statistic in small sample sizes). Hence Boyd cannot, as she does, claim strong empirical support of the theoretical model. Instead, the model warrants reanalysis after obtaining an appropriate sample size.

Second, Boyd's work falls short as an exemplar in theoretic specification because (a) the hypotheses linking the theoretic constructs in her model are not clearly specified; (b) the correspondence rules linking these constructs to derived and empirical concepts are not articulated; and (c) the meaning given these empirical concepts through operational definitions are stated but not justified, and use of multiple manifest indicators is limited. I would have liked to see stronger theoretic justification for the structural model represented by Boyd's Figure 1. What Boyd might have done after theoretically defining each dimension was to, step-by-step, advance and defend each path based on specific theoretic propositions from relationship development theories, previous empirical research, or well-reasoned arguments where theory and empirical evidence is lacking or weak (cf. Blalock, 1969, 1982, 1985). Boyd circumvents such exact statements of theory by presenting her entire model as a single hypothesis. Moreover, some implicit justifications within the text appear contradictory to specifications in Figure 1. For example, Boyd discusses mother-daughter identity as the intended endogenous variable; yet Figure 1 shows daughter conflict as the major outcome variable. Also, alternative specifications other than Figure 1 are equally plausible. For example, from symbolic interaction and developmental communication theory perspectives, one could argue that mother-daughter dyadic identity is *developed and sustained* through interaction. Therefore, logical hypotheses are that both mother's conflict and daughter's conflict would negatively influence mother-daughter identity. Moreover, from a transactional perspective, a reciprocal association between mother and daughter conflict would be posited. It is hard to accept Boyd's specification where only mother's conflict causes daughter's conflict and not also the reverse. Similarly, there are inconsistencies between text and Figure 1 regarding the causal relationship between daughter's attachment and dyadic identity. Further, Boyd defines mother-daughter identity as characteristics which "become part of their individual as well as their dyadic identity." Thus an alternative specification of dyadic identity (permitted by using LISREL) more congruent with Boyd's argument would distinguish daughter's and mother's identity as separate dimensions, permitting them to covary in the model. This would represent both the relational mutuality posited by Boyd (at the structural level) and the individual identity she hypothesizes. Respecifying the model in this way would, in fact, test for the strength of the covariance between mother and daughter identity (representing dyadic identity), which Boyd's specification does not permit. Taken together, these arguments suggest competing models that could be specified and tested (given an adequate sample). Hence, for theoretic reasons, Boyd cannot claim strong support for her model.

Third, the measurement model warrants greater specification. Rather than justifying the correspondence between latent constructs and indicators, Boyd simply names a multi-item scale operationalizing each dimension. What she might have done, for example, is (a) argue for the correspondence between her theoretic definition of attachment and the use of specific items from the Walker/Thompson scale—that is, those specific items tapping the meaning of attachment in her theoretic definition (emotional dependence and need for accessibility)—and (b) do likewise for the



identity and conflict dimensions, thereby setting up an auxiliary measurement model for testing. Moreover, a developing standard in structural equation modeling is specifying multiple indicators as reflectors of each theoretic dimension. The only factor in the model that meets this criterion is “dyadic identity.” Yet the specification here does not permit tests of the accuracy of indicators chosen. For example, rather than summing the various subscores on the Tennessee Self-Concept (i.e., identity, personal self, family self, and so on), it would be preferable to have single indicators of each of these subscales as reflectors of the mother and daughter identity dimensions (or, alternatively, select only subscales corresponding to her theoretic definition, treating each as a separate index). I turn now to the technical advantages of LISREL and how Boyd’s work compares to standard procedures.

The LISREL and EQS programs have some major advantages permitting (a) estimation of the posited structural associations *and* measurement associations (providing reliability tests of each indicator and the set as a whole); (b) tests of theoretic propositions without the attenuating effects of measurement error (which seriously biases parameter estimates) by incorporating the fallibilities of measurement; (c) simultaneous estimate of all parameters in a causal model; and (d) use of powerful diagnostics for evaluating the fit between model and data (Eggert, Herting, & Nicholas, 1988). These advantages mean a better assessment than is afforded by typical path analysis.

Estimating theoretic models with LISREL (or EQS) typically involves two primary steps (cf. Bentler, 1985; Herting, 1985; Herting & Costner, 1985): (1) a confirmatory factor analysis (CFA) to test the hypothesized measurement model and provide construct validity and “reliability”; and (2) a structural model analysis to estimate the specified hypotheses individually and simultaneously, thereby evaluating the overall causal model. Note that testing the structural model precludes a good-fitting measurement model. Theoretic misspecifications can occur in both measurement and structural models. However, by employing a two-step approach, the researcher can use the diagnostics provided to identify and correct misspecifications: first in the measurement model and then in the structural model (cf. Herting & Costner, 1985). For example in Step 1 of Boyd’s model, we note that mother’s identity as measured by a single index—TSCS—is not an accurate reflector of dyadic identity ( $\lambda = .24$ ), demonstrating a misspecification. Hence the dimension is more accurately “daughter identity.”

One of the disappointments in Boyd’s procedures is that she does not estimate her measurement model. First, she does not use the multi-items available to her for testing her measurement model (e.g., 9 indicators for attachment, 8 TSCS subscale indices for both mother and daughter self-identity, and 8 indicators for both mother and daughter conflict). Instead, she constructs a single indicator for each dimension by summing the respective items. By doing so, she does not discover the particular indicators creating measurement error and, therefore, cannot model this error. Second, in testing the structural model, Boyd fixes each indicator (except the TSCS ones) at 1.00, thereby assuming perfect measurement—undesirable when we know there is

error (e.g., alpha for mother conflict is .67; for daughter conflict, .82, and so on). Thus Boyd fails to make use of one of LISREL's major advantages—the ability to model measurement error when estimating the causal paths. Without having estimated her measurement model (or, at a minimum, fixing the indices at the alpha reliability level obtained with this sample, rather than at 1.00), Boyd's structural coefficients are biased in unknown ways by assuming perfect measurement, similar to what she might obtain with typical regression/path analysis. Hence here again, but for technical reasons, Boyd cannot claim, as she does, strong support for her model.

In sum, Boyd's work could be enhanced by greater precision in theory construction (at both measurement and structural levels), and by using the full range of LISREL's advantages and model estimation procedures. However, this precludes an adequate sample size.

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### Commentary by Yates

This study represents an important attempt to link the development of a theory of mother-daughter identification with the actual testing of the theory using structural equation modeling. One of the strengths of the investigator's approach was to examine both individual and dyadic responses about the mother-daughter relationship as the unit of analysis rather than individual responses only. These types of data-analytic strategies are rare in nursing science, yet many of the phenomena which nurses are interested in center around patterns within and between dyadic and family relationships. Ultimately, this data-analytic strategy will yield a broader understanding of the patterning of human relationships. Another strength of this theory of mother-daughter identification is the author's choice of statistical methods—LISREL. Linear structural equation modeling is a very powerful tool for the construction and testing of theoretical models which is another important factor for the development of nursing science. The investigator is to be commended for taking on such a complex and challenging task. There are two factors that this researcher would like to comment on in relation to the author's application of LISREL.

First, a larger sample size in which to test the theory would be optimal. If the sample size is small (less than 100-200 subjects), the chi-square statistic is less dependable as an indicator of the quality of the model fit because of sampling fluctuations (Hayduk, 1987). Other indicators of the quality of the model fit include negative error variance estimates, and any problems with nonconvergence of the iterative procedure (Hayduk, 1987). A history of the modeling process that produced the final published model would be helpful to evaluate whether any other aforementioned factors were a problem, as well as the steps taken by the investigator to come up with the final model of mother-daughter identification.

A second issue is that, ideally, LISREL requires multiple indicators of each latent unobserved dimension rather than a single indicator. However, except in the case of dyadic identity, the investigator used single indicators in the form of total scale scores and set the lambda loadings at 1.0. Rather than using total scale scores as a single indicator, another method for selecting indicators would be to choose theoretically relevant individual items from the scales. For example, rather than using the entire conflict scale as a single indicator of both the daughter's and the mother's conflict levels, an alternative method would have been to select three to four items that theoretically reflect conflictual aspects of the relationship, such as the level of tension, extent of disclosure, and so forth. This would have yielded multiple indicators of conflict and the diagnostic tools from the LISREL analysis would have provided a

rich source of information about the reliability and validity of these indicators (parameter estimates, standard errors, squared multiple correlations, and coefficients of determination). Another problem associated with single indicators of each latent dimension is to fix the lambda loadings or parameter estimates at 1.0. This assumes perfect measurement which, in the case of most measurement tools, is unlikely. An alternate method would be to fix the loadings at the level of the internal consistency reliability of the specific subscale which assumes some measurement error but more closely approximates the epistemic correlations. One last point is that once the indicators are changed, the total context of the model that is being analyzed changes, which may or may not alter the final results.

The author thoroughly discussed potential reasons for why there were no significant linkages found between mother-daughter identification and the other variables in the model. An additional reason might be related to the link between the latent dimension and the manifest indicator for mother-daughter identity. Theoretically, dyadic identity was defined as the extent to which one person had internalized the other's traits or characteristics. However, the indicator of dyadic identity, the total self-concept, seems too global to reflect the degree of shared identity with another individual. Rather than measuring the individual's perception of the self, perhaps one needs to measure each individual's perception of the extent to which identity is shared between the two members, or the degree to which the other's traits have been internalized. This would seem to put the level of measurement at the dyadic rather than the individual level. Furthermore, perhaps dyadic identity "exists" not only in the perception of the person but in the nature of the transactions or exchanges between them.

The major emphasis in this study was the development and testing of a theoretical model of mother-daughter identification using linear structural equation modeling. More knowledge is needed about how mothers and daughters interact and related to one another particularly in the development of self-identity and, further, how that identity influences the individual's responses to health and illness. Boyd's study is an initial yet important contribution toward that end.

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## Response by the Author

My colleagues make several important points and certainly provide a perspective that highlights the limitations of my initial study on mother-daughter identification. While it is not fair to my audience to simply say, "I agree with their comments and if only I knew then what I know now . . .," it certainly is tempting. However, rather than defer comment, I will respond to several of their major points.

Drs. Eggert and Yates offer three major suggestions regarding this study: First, that a larger sample size would have been optimal; second, that a history of the modeling process would have been useful to the reader; and third, that the measurement model needed far greater specification.

The sample of 158 subjects (79 mother-daughter pairs) is small, and although at the time, and given the number of variables, I believed the sample size to be adequate, I agree that further research with a larger sample is needed. A larger sample size would provide greater confidence in the fit statistics as well as provide an opportunity to test nested models—essential for the theory building process. My work in this area continues and the current sample is substantially larger.

The theoretical model of mother-daughter identification evolved out of my dissertation research. In an earlier version of this article, I included a discussion of the development of this model as well as the theoretical justification for the linkages between the constructs. However, as is often the case, I was requested to cut substantial portions of the text in order to fall within the editor's page limitations and this was the portion removed. I regret any confusion this caused when trying to interpret the theoretical intent of the model. Additionally, this discussion may not have been clear since Dr. Eggert felt that in my theoretical discussion, mother-daughter identity was intended as the outcome variable. This was not my intent; rather, daughter's conflict was intended as the outcome variable.

Both of my colleagues describe how the research could have been strengthened with the use of multiple indicators and how this could have been accomplished within the existing data set. Dr. Yates points out that this might have altered the model but would have strengthened the conclusions drawn from the analysis. I appreciate these comments and, certainly, multiple indicators will be used in the future.

Three and one half years after completing this research on mother-daughter identification, I too see the limitations of this study. However, this investigation still represents an attempt to build nursing theory and to examine a subject that has been neglected in the health and social sciences—the mother-daughter relationship. The role of structural equation modeling in theory building and testing is important. Indeed, the challenge to develop strong theory based research within a nursing paradigm remains and it is toward this end that we must all strive. Again, I thank my colleagues for their insights. It is through an interactive process such as this that we will move nursing research forward.