Eating disorders and sense of self: A learning theory conceptualization

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ABSTRACT

The learning theory view of *sense of self* is that problems in one's knowledge about the self arise when: (1) caregivers fail to recognize indicators of a child's private emotional and visceral experiences and (2) subsequently fail to offer appropriate labels that discriminate among those experiences. The purpose of this study was to evaluate the relationship of the **process** believed to build a *sense of self* to **level** of *interoceptive awareness* (*IA*) and to risk for eating disorders. One hundred twenty seven undergraduate and graduate students (112 women) completed the Eating Disorders Inventory—3 (EDI-3). Authors assigned (EDI-3) subscales to one of two groups based on their relevance to *IA* (i.e., *IA*-relevant and Not *IA*-relevant.) The classification was supported by factor analysis. Subscales from the EDI-3 were thus used as a measure of a respondent's *IA* **level**. Students also completed the Experience of Self Scale (EOSS). The EOSS was used as a measure of a respondent's likely exposure to the experiential **process** believed to build *sense of self*. Product-moment correlations and multiple regression modeling were used to test the relationships between EOSS and EDI-3 *IA*-relevant, Not *IA*-relevant, and Eating Disorder risk scores. With few exceptions, results suggested that *IA* **level** and *sense of self* **process** are related. These findings warrant further exploration of the relationship between *IA* **level** and *sense of self* **process**. A link between the two would inform our understanding of how problems in *IA* develop and how best to prevent and treat them.

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Research suggests a relationship between *interoceptive awareness (IA)*, or awareness of visceral/emotional events, and eating disorders (EDs) (e.g., Craighead, 2006; Fassino, Pierò, Cramaglia, & Abbate-Daga, 2004; Garner, Olmstead, & Polivy, 1983; Leon, Fulkerson, Perry, & Cudeck, 1993; Leon, Fulkerson, Perry, & Early-Zald, 1995). Misidentification of internal events leads to inappropriate responses to ameliorate them. When confronted with aversive states (e.g., loneliness, hunger) human beings routinely apply escape/avoidance responses (see Catania, 2013) to terminate or lessen them. The resulting reduction of aversiveness negatively reinforces the response, leading to its recurrence. The individual who accurately identifies aversive internal states finds responses that remedy them (e.g., "When I am hungry, I eat." "When I am lonely, I look for a conversation partner."). However, the individual who misidentifies aversive internal states may not discriminate among them (e.g., "hungry" from "lonely"; simply identifying both as "bad") and misapply escape/avoidance responses. For some, bingeing may be a misapplied escape/avoidance response. Having binged often elicits its own set of bad feelings, evoking purging as a second escape/avoidance response. This explanation is consistent with learning theory and with opinions in the ED literature (e.g., Heatherton & Baumeister, 1991). Relatedly, individuals who misidentify aversive internal states are inefficient in deciding when to end a behavior that was applied to

remedy them. Some argue (e.g., Shafran & de Silva, 2003) that clarifying factors associated with EDs, like *IA* problems, should lead to improved prevention/intervention. Bruch (1969) posited that identification and labeling of internal states is not innate but learned ability. An understanding of how *IA* is learned should enhance our knowledge about preventing/ameliorating *IA* problems.

The learning theory literature on *sense of self* (Kanter, Parker, & Kohlenberg, 2001; Kohlenberg & Tsai, 1991, 1995) provides a model for how life experiences build *IA*. The expression of internal events in the young is undifferentiated. Adverse emotion is communicated with crying; appetitive, with cooing and smiling. Parents/caregivers help make the child's response more specific. When done properly, caregivers look to external events surrounding the undifferentiated response (e.g., crying) and offer labels that match the likely internal event. Kanter et al. (2001) offer "you're hungry" as an example of a matching caregiver response in the case in which it had been a long time since feeding; "you're hurt" would be a matching caregiver response if the child had just fallen. Over time, careful caregivers' guesses are more correct than incorrect. The child learns labels that match internal states and uses these labels to communicate with others about him/herself and guide his/her search for solutions to distress. However, when caregivers fail to look carefully for external clues, responding inappropriately (e.g., "you're hungry" even though the child has just fallen; "you can't be hungry" even though the last meal was long ago), two problematic things happen: The child fails to develop labels for internal events and becomes dependent on others

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to interpret his/her undifferentiated emotions. Considered from this perspective, "knowing" one's private states is a skill that exists in most people because proper learning has occurred. Otherwise, a *sense of self* skill deficit results.

The purpose of this study was to evaluate the relationship between *IA* **level** and the learning **process** believed to underlie *sense of self*.

1. Method

Participants were 127 students (112 female) from a Midwestern US, urban university. The university's IRB approved this study.

1.1. Instruments

A demographic questionnaire asked about age, gender, race/ethnicity, and year in school.

The Eating Disorder Inventory-3 (EDI-3; Garner, 2004) asks respondents to use 5-point Likert scales to respond to ED-relevant statements. Higher scores indicate greater pathology. This study used scores from 9 non-overlapping psychological subscales (i.e., LSE[1], PerAli, IntIns, IntAli, IntDef, EmoDys, Per, Asc, & MatFea) and 3 ED risk subscales (i.e., Bul[1], DriThi, & BodDis). Internal consistency, test–retest reliability, and criterion validity indices are strong (Garner, 2004).

The Experience of Self Scale (EOSS; Parker, Beitz, & Kohlenberg, 1996) measures the degree to which one's description of private experiences is influenced by casual acquaintances when the respondent is with them, casual acquaintances when the respondent is alone, close relations when the respondent is with them, and close relations when the respondent is alone. Reponses are made on a 7-point Likert scale with higher scores indicating greater reliance on others. The items form four subscales (Casual Present, Casual Alone, Close Present, and Close Alone) with sound internal consistency and criterion validity (Kanter et al., 2001; Parker et al., 1996). The work of Kanter et al. (2001) suggests that strong influence by casual acquaintances, present or absent, indicates problems in how *sense of self* was taught.

1.2. Procedure

Participants accessed the study's website, completed the consent form, and then the demographic questionnaire, EDI-3, and EOSS. The first two authors independently examined EDI-3 psychological subscale definitions and, with 100% agreement, sorted subscales into *IA*-relevant and Not *IA*-relevant categories. A subscale was deemed *IA*-relevant if its definition identified it as measuring, labeling, or reacting to personal internal experience. The resulting *IA*-relevant set of four, and the Not *IA*-relevant set of five, subscales[2] provided the structure for hypothesis testing.

1.3. Hypotheses

1. *IA*-relevant and ED risk subscales would correlate positively with EOSS Full Scale, but Not *IA*-relevant subscales would not.
2. *IA*-relevant and ED risk subscales would correlate positively with EOSS Casual Alone and Casual Present, but not with Close Alone or Close Present. Not *IA*-relevant subscales would not correlate with EOSS subscales.
3. *IA*-relevant and ED risk subscales would be related to EOSS Full Scale. Relationships would be due largely to Casual Present and Casual Alone components.

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[1] Sub-scale abbreviations are defined in Table 1.
[2] Assignment of sub-scales as *IA*-relevant and Not *IA*-relevant is shown in Table 1.

2. Results

Participants ranged in age from 18 to 51. The ethnic distribution reflected the university's composition (57% White/Caucasian, 16% Black/African–American, 13% Hispanic, 9% Asian). EDI-3 and EOSS scores[3] revealed wide ranges, though most were somewhat truncated. Positively skewed variables were subjected to square root transformations, which normalized their distributions. All alpha coefficients were consistent with those reported in the literature.

Product–moment correlations within *IA*-relevant and ED risk sets were strong (.51 to .75 and .62 to .70, respectively) while correlations among Not *IA*-relevant scores ranged from − .03 to .69. To better understand relationships among EDI-3 subscales, a Principal Component Analysis was conducted. Three components (figure available from authors) accounted for 71.4% of the variance. *IA*-relevant subscales clustered in the mid-part of the factor space being related to two of the three factors. Not *IA*-relevant scales appeared in different parts of the factor space.

Because of the number of analyses involved in hypothesis testing, the Bonferroni correction was applied to maintain an overall $p < .05$ alpha level. Thus, for Hypothesis 1, alpha was set at $p = .004$. As predicted (see Table 1), *IA*-relevant scores were positively related to, and Not *IA*-relevant scores failed to show relationships with, EOSS Full Scale scores. ED risk scores of Bul and DriThi were positively related to EOSS Full Scale but BodDis was not.

For Hypothesis 2, alpha was set at $p = .001$. *IA*-relevant scores of LSE, PerAli, and IntDef were related, as predicted, to Casual Alone and Casual Present (see Table 1). In addition, the *IA*-relevant score of EmoDys was related to Casual Present though not to Casual Alone. Not *IA*-relevant scores failed to show relationships with Casual Alone and Casual Present, as predicted. Contrary to prediction, positive correlations were found for IntIns with Casual Alone and Asc with Casual Present.

ED risk scores Bul and DriThi were positively correlated with Casual Present, as predicted, but not with Casual Alone. The correlation of BodDis with Casual Present was only marginal ($r = .28$, $p < 0.002$).

In order to evaluate Hypothesis 3, two new scores were formed: Casual Alone and Casual Present were summed to form a Casual Component score; Close Alone and Close Present were summed to form a Close Component score. Each EDI-3 subscale that was significantly correlated with EOSS Full Scale was used as a criterion in multiple regression analyses. A model consisting of Casual Component and Close Component was tested and prediction attained by this model was compared with that of the Full Scale Score. When this analysis suggested that prediction by the components surpassed prediction by Full Scale, Beta weights for the components are reported. For Hypothesis 3, alpha was set at $p = .004$. Within significant prediction models, changes in R^2 were evaluated at the $p < .05$ level.

Analyses revealed significant prediction from Casual and Close Components for 5 of the 6 criteria (see Table 2). With the exception of EmoDys and DriThi, prediction from the components surpassed that of Full Scale, indicating that prediction is enhanced when the two sources are weighted differently. In each case, the Casual Component weight was significant but the Close Component weight was not.

3. Discussion

Our results suggest that *IA* **level** and *sense of self* **process** are related. Overall, results support the statement that the extent to which one is influenced by others, particularly casual acquaintances, is related to EDI-3 scores involving *IA* but not to those measuring other phenomena.

Two findings were inconsistent with predictions. While EmoDys was related to EOSS Full Scale and Casual Present, it was not related to Casual Alone. EmoDys was chosen for these analyses because private

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[3] Descriptive statistics for EOSS and EDI-3 scores are available from the authors.