



The Influence of Borderline Personality Organization on Trait Depressive Affects and the Generation of Negative Life Events

Masayo Uji^{1*}, Toshiaki Nagata² and Toshinori Kitamura³

Abstract

Aim: This study sought to assess whether borderline personality organization (BPO) influenced trait depressive affect, the generation of negative life events (NLEs), and state depressive affect, which includes the depressive affect component caused by the NLEs.

Methods: The study population was 350 university students in Japan. They were solicited to complete questionnaires on three occasions over a six-week period. The Inventory of Personality Organization and Self-Rating Depression Scale (SDS) were used to assess BPO and depressive affect, respectively. Structural equation modeling and simultaneous analysis of multi-groups were used for statistical analysis.

Results: Structural equation modeling revealed a statistically significant influence of BPO on both trait depressive affect and NLE generation. Simultaneous analysis of multi-groups showed a significant difference between high and low IPO groups in the covariance between the error variables of trait depressive affect and NLE generation, although it did not show a significant difference in NLE–SDS interaction between the two groups.

Conclusion: BPO had an impact on NLE generation and trait depressive affect. It did not affect the magnitude of depressive reactions to NLEs.

Keywords

BPO; Trait depressive affect; State depressive affect; NLE generation

Introduction

In general, people hope that they do not encounter negative life events (NLEs), because these experiences generate stress and require adaptation to a new environment. However, it has been reported that people with particular personality characteristics or who are in particular moods may generate more NLEs than people without these characteristics. Simons et al. [1] noted that cognitive factors influence

not only the definition and evaluation of the severity of NLEs but also their actual triggering by way of an individual's behavior. With respect to the definition and evaluation of NLEs, individuals in a depressive mood have been demonstrated, because of their pessimistic perception, to be more likely to define some particular event as an NLE even though it is not necessarily "negative," and to also evaluate the NLE more severely than an individual without a depressive mood [1]. In addition to depressive mood, some personality characteristics, such as neuroticism and borderline personality disorder (BPD) have been identified as factors that bring about NLEs. It has been found that reactivity to minor stressors significantly accounts for daily distress in individuals with neuroticism [2], indicating that these individuals tend to evaluate minor NLEs more severely. Individuals with BPD have been proven to be more likely to perceive others' feelings as negative [3-8] -even sometimes as aggressive-than clinical samples with other diagnoses and non-clinical samples [4,5]. Some studies, in contrast to those above that focused only on negatively biased cognition, have proven that patients with BPD show enhanced sensitivity, but also accuracy, in reading the mental states of others [9,10].

Regarding the actual triggering of NLEs, Freud, the father of psychoanalysis, considered the tendency to generate NLEs to be part of the nature of mankind in general. He explained the underlying psychological mechanism by developing concepts such as "masochism" [11], "destructive instinct," and "repetition compulsion" [12,13]. On the other hand, some researchers consider this tendency to be dependent on particular personality characteristics, and have proven that personality traits such as neuroticism [2,14-17] and autonomy [18] tend to actually generate NLEs. In addition to neuroticism and autonomy, sociotropy, because of the "fear of criticism and rejection" it entails, has also been considered a personality mode that tends to generate NLEs, resulting in a depressive mood [19]. People with these personality characteristics play an active role in generating NLEs, by their behaviors, regardless of whether or not the individual expects a negative consequence to result from their behavior. BPD also can be regarded as a personality diagnostic category which would actually cause NLEs, because the major symptoms of BPD, for instance fear of abandonment [20] and affect dysregulation [7], might cause people with BPD to engage in inappropriate interpersonal behaviors such as regressions, manipulation [20], and threatening others through self-destructive behaviors [21,22], all of which might invite interpersonal conflict. Indeed, there have been empirical studies showing that patients with BPD tend to elicit negative emotions and attitudes from medical staff [23-25], i.e., negative countertransference reactions [20], which could also manifest in other interpersonal relationships. These negative reactions from others would enhance these individuals' interpersonal distress. Daley et al. [26] showed that symptoms of DSM Cluster B personality disorders, in which BPD is categorized, predicted subsequent conflict-related interpersonal chronic stress and self-generated stress, whereas DSM Cluster C symptoms did not. In addition to the above personality characteristics, individuals' moods, particularly depressive moods, have also been found to contribute to the generation of NLEs [1,18,27].

Based on the above research, we coined the phrase "a proneness

*Corresponding author: Masayo Uji, Department of Bioethics, Kumamoto University Graduate School of Life Sciences, 1-1-1 Honjo, Chuoku, Kumamoto, Japan 860-0811, Tel: 81-(0)96-373-5523; Fax: 81-(0)96-373-5523; E-mail: ujimasayo@hotmail.co.jp

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to generating NLEs” to encompass any tendency to generate NLEs intrinsic to the individual, stemming from their own cognitive, affective, and behavioral patterns. In other words, NLEs were defined as both actually generated negative episodes as well as those that were subjectively perceived as negative due to the individual’s cognition. On the basis of this definition, this study aimed to verify the existence, or lack, of “a proneness to generating NLEs” and explore the natures of depressive affect among individuals with Borderline Personality Organization (BPO).

Before presenting research questions of this study, the concept of BPO should be explained. Kernberg classified personality organizations into three broad classes, based on a psycho-dynamic model of personality dysfunctioning [28]. BPO is ranked between Neurotic Personality Organization (NPO), the highest functioning class, and Psychotic Personality Organization (PPO), the lowest functioning class. It is distinguished from NPO by two phenomena: predominance of primitive psychological defense and marked identity diffusion, which will be explained below. It differs from PPO in that it maintains broadly intact reality testing, although an individual within the BPO class occasionally experiences temporal but reversible loss of reality testing due to psychotic regression [29]. That is to say, in the case of BPO, differentiation of self from object images has been attained to a sufficient degree [29].

It should be noted here that BPO is not equal to DSM-defined BPD. The main difference between the two is that BPD is a distinct diagnostic category, whereas BPO is a spectral concept. Furthermore, compared to BPD, BPO covers a wider range of personalities based on psychoanalytic theory [29,30]. As Lenzenberger et al. [28] noted, “DSM-defined BPD is but one disorder that can derive from borderline personality organization.” To illustrate the range of DSM defined personality disorders, DSM cluster A-classified personality disorders are generally placed at the psychotic end of the BPO continuum, and DSM cluster C-classified ones are generally placed at the neurotic end [31].

We will now refer to psychodynamic phenomena such as primitive psychological defenses and identity diffusion, which characterize BPO, in more detail. According to Kernberg, “integration of libidinally determined and aggressively determined self and object images fails to a great extent in borderline patients.” These individuals’ “lack of synthesis of contradictory self and object images interferes with the integration of the self concept and with the establishment of total object relationships and object constancy [29].” The characteristics of their object relation is either “need-gratifying” or “threatening”, i.e. partial object relationships. The need to preserve need-gratifying object relationships as well as good self and object images from dangerous threatening object relationships and bad self and object images, results in “defensive division of the ego [29].” Due to the inability to recognize the good object and bad object as a whole person, they do not have capacity for concern [32] or guilt [33]. The defenses utilized by these individuals are splitting, expressed as contradictory ego states alternating with each other, or primitive dissociations reinforced by their use of denial, projective identification, and unconscious fantasies of omnipotence [34]. This splitting and its related primitive psychological defenses seriously hinder the integration of super-ego, all of which contribute to identity diffusion and severe weakness of ego. Kernberg’s posited the above theory regarding BPO, and with colleagues developed Inventory of Personality Organization (IPO) [28]. It consists of three main

domains: primitive psychological defenses, identity diffusion, and reality testing, as well as two supplementary ones: aggression and moral value.

The first research question of this study was whether BPO contributes to “a proneness to generating NLEs.” Using the above characteristics of BPO, we will first discuss the probable tendency of individuals with severe BPO level to negatively evaluate events. As explained, these individual’s object relationship is partial. The two objects: good and bad are not integrated, therefore the good object is extremely idealized. It was assumed that this partial object relationship would cause cognitive biases, both negative and positive. At the practical level, the external object is not able to meet the individual’s idealized object image and the individual is lacking in the ability to maintain object constancy, thus the idealized object relationship is frequently lost. Due to their impaired ego, they would be unable to manage the psychological pain caused by this object loss, which would bring about interpersonal distresses, i.e. perceived negative events.

Next, it should be discussed whether individuals with BPO are apt to actually trigger NLEs. As noted, due to the predominance of primitive defenses, their ego function is severely impaired, which is reflected in these individuals’ lack of anxiety tolerance and impulse control [29]. They neither well control nor tolerate anxiety or frustration, which would lead to acting-out, such as controlling others through dependency, verbal attack, and threatening others through self-destructive behaviors, resulting in interpersonal NLEs. Related to this, Lenzenweger et al. [28], using Buss-Durkee Inventory for assessing aggressive dyscontrol, demonstrated significant positive correlations between any of the three IPO main subscale scores paired with either of the aggressive dyscontrol scale score: assault and irritability. Furthermore, as Kernberg [29] noted, the failure in “integration of libidinal and aggressive strivings” contribute to a “general lack of neutralization of instinctual energy” and “severe restriction of the conflict-free ego” [35]. Therefore, their “judgement”, “thought processes”, “autonomous functioning”, “synthetic-integrative functioning”, and “mastery competence”, all of which are one of the twelve functions conducted by ego proposed by Bellak et al. [36], are severely damaged. In addition, due to the severe ego dysfunction, these individuals lack developed “sublimatory channels [29].” All of these factors can be a distraction when they have to work on constructive tasks at a practical level. For these reasons, we hypothesized an individual with a severe level of BPO would be more likely to engage in actually causing NLEs both interpersonal and non-interpersonal. Based on these previous psychodynamic theories and findings, we hypothesized that BPO contributes to the generation of NLEs, including both subjectively perceived and actually triggered NLEs.

The second research question addressed by this study relates to the nature of the depressive affect accompanying BPO. In assessing a depressive affect using depression measures, we should distinguish whether the marked score is trait or state depressive affect. Ritterband and Spielberger [37] noted, “the Beck Depression Inventory (BDI), as well as other depression measures, appear to confound the state-trait distinction in that the instructions and item content do not clearly distinguish between feeling of depression as an affective state and a more enduring behavioral manifestation of symptoms of clinical depression [38].” They defined trait depression as a stable personality trait, and state depression as a variable emotional state [39]. Then

Spielberger and his colleagues tried to assess trait and state depressive symptoms by applying a different instruction, i.e. for state items, the respondents were asked to assess the intensity of each symptom at that moment, whereas for trait items, they were asked to assess the frequency of each symptom they generally experience [38-40]. In our study, we used Self-Rating Depression Scale (SDS) [41] to assess the respondents' depressive affect because its Japanese version's validity and reliability had been already confirmed. However, SDS also has the shortcoming discussed above. A further concern was that the instruction for assessing state depressive symptoms proposed by Spielberger and his colleagues does not seem to detect purely the state depressive symptoms but it would also detect underlying trait ones. Vice versa, even asking a general frequency of the symptoms, it would be unlikely that the evaluated score is purely a trait one and independent of state symptoms. We therefore tried to solve this problem by a statistical technique: structural equation modeling which enabled us to hypothesize an unobserved variable "trait depressive affect." The details of the hypothesis model are explained in the methods section.

Kernberg's view regarding the relationship between personality pathology and depressive levels is that the severity of a depressive affect depends on the "degree of pathological superego pressures his ego is subjected to [29]." The nature of superego in an individual with BPO is severely punitive and poorly integrated. This sadistic superego originally came from projected bad self and object image, which was then introjected after being influenced by "distorted experiences of the frustrating and punishing aspects of the parents [29]" and is not "de-personified [42]." This punitive superego would oppress their weak ego, leading to a severe depressive level. Although there are few empirical studies examining the relationship between depressive affect and BPO, using IPO, Lenzenweger et al. [28], by calculating correlations between the Beck Depression Inventory (BDI) score and each of the three IPO main subscale scores, showed positive relationships in all three instances. In Japan, Igarashi et al. [43], using a Japanese version of IPO and Hospital Anxiety and Depression Scale (HADS), demonstrated significant partial correlations between HADS depression domain score and each IPO subcategory score, indicating that people with higher BPO pathology demonstrate higher depressive level. These cross sectional studies verified that BPO individuals were more likely to experience severe depressive affects. However, it has not been clarified whether this negative affect was characterized as trait, ingrained in the individual's personality, or state, which includes the depressive affect caused by NLEs.

It can be assumed that an individual with high BPO pathology would frequently encounter object loss, as noted previously. In "Mourning and Melancholia", Freud [44] proposed the psychodynamic process of melancholia. In melancholia, when an object-relationship is shattered, the libido is withdrawn from object into ego, and is then used for the establishment of narcissistic identification of the ego with the abandoned object. Freud states that the "shadow of the object fell upon the ego, and the latter could be henceforth be judged by a special agency [superego], as though it were an object, the forsaken object" and that "in this way, an object-loss was transformed into an ego-loss." Thus, impoverishment of ego/depressive affect will be brought about. If this psychodynamic mechanism were triggered in an individual with higher level of BPO, they would narcissistically regress, identifying with the object in the face of painful object-loss, which would be represented as NLEs in

this study. And this object-loss would cause higher level of depressive reaction in the case of an individual with higher level of BPO, because they would harbor intense aggressive impulses towards the forsaken object in conjunction with their underlying sadistic superego and vulnerable ego. We therefore hypothesized that an individual with high BPO would be more likely to present state depressive affect in the face of object-loss/NLE, with harsh self reproach.

We will next discuss the question of whether an individual with higher level of BPO presents trait depressive affect. It could be premised that the presence of harsh, ego-oppressing superego, in addition to repeated painful object-loss, would bring them a depressive affect tinged with hopelessness. Indeed, Igarashi et al. [43] demonstrated a significant correlation between each of the five IPO subscales and Self Efficacy Scale (SES) score, which can be related to hopeless depressive affect. Rogers et al. [45] noted that the depressive affect frequently experienced by an individual with BPD, one of the personality prototypes included in BPO, is specifically characterized by features including but not limited to self-condemnation, emptiness, abandonment fears, self-destructiveness, and hopelessness [45], suggesting the depressive affect is trait.

In addition to the two research questions above, we also examined whether Hammen's stress generation model [18,27,46] would fit a Japanese population. According to this model, depressive moods are caused by NLEs and vice versa, and people with depressive state actually generate NLEs. In order to examine whether Hammen's stress generation model fit our sample, we hypothesized that NLEs and depressive mood would react with each other.

A summary of the hypotheses is as follows:

1. BPO contributes to the generation of NLEs.
2. BPO is related to both the "trait" and "state" depression triggered by NLEs.
3. Depressed mood contributes to the generation of NLEs.

Materials and Methods

Participants and procedure

This study was part of a larger follow-up study on depressive moods and suicidality in a population of Japanese university students, using a nine-wave, four-month, prospective design with students from two universities in Kumamoto. Only the data from the seventh, eighth, and ninth waves were used. The students' majors were either social welfare or nursing. One of the authors was a lecturer from the two universities. The questionnaires were distributed during classes, completed by the students, sealed in envelopes, and returned at the students' discretion. For the purpose of anonymity, aliases were used. The duration between waves depended on class schedules and was not fixed. Subjects were assured of anonymity and participation was voluntary.

The number of eligible students was 642. Of these, 434 attended on every occasion, i.e., the seventh, eighth, and ninth waves, and 6.7% of students declined to participate at least once. Therefore, a total of 405 agreed to participate in this study, and of these, 350 (86.4%) completed every item of the Inventory of Personality Organization (IPO) [30], the Self-Rating Depression Scale (SDS) [41], and NLE. Little's test was conducted to examine whether missing data was missing completely at random, and the result, chi-square = 80.83

($p=.274$), indicated that this was the case. Therefore, we concluded that listwise deletion was acceptable and analyzed the 350 subjects, which included 66 men and 284 women, with a mean age of 18.9 years (SD: 1.23).

The IPO [30] was included in the questionnaire given to students at wave seven. The SDS [41] was included in every wave of the longitudinal study, as were the questions related to NLEs. In the analyses of this study, we adopted the SDS affective category scores and NLE-related information from the seventh, eighth, and ninth waves. The interval between the seventh and eighth waves was four weeks, while that between the eighth and ninth waves was two weeks. For convenience, the SDS affective category at the seventh wave is referred to as SDS_0_week, that at the eighth wave as SDS_4 week, and that at the ninth wave as SDS_6 week. In the same way, NLE_0 week, NLE_4 week, and NLE_6 week correspond to the seventh, eighth, and ninth waves, respectively.

Measurements

Borderline personality organization: The IPO is a self-report measure based on the central dimension of Kernberg's (1970) [28,29] personality organization model. It consists of 83 items on a 5-point scale from "never true = 1" to "always true = 5." Kernberg's dimensions are measured by the three primary scales of the IPO: Primitive Defenses (16 items), Identity Diffusion (21 items), and Reality Testing (20 items). Clarkin et al. (2001) [30] also added two additional scales, Aggression (18 items) and Moral Values (eight items), along with two additional Primitive Defenses items and one additional Identity Diffusion item. The psychometric properties of the original IPO have been reported [47,48]. With the original authors' permission, Igarashi et al. [43] translated it into Japanese. They confirmed the original authors' five-factor structure in a Japanese population, with a reduction of the number of items. The distribution of items in each of the subcategories of the Japanese version of the IPO is as follows: 11 "Reality Testing," nine "Identity Diffusion," four "Primitive Defenses," six "Aggression," and seven "Moral Value." As with the original version, each item ranges from "never true = 1" to "always true = 5." Therefore, the subcategory scores of the Japanese version of the IPO range from 11 to 55 for "Reality Testing," 9 to 45 for "Identity Diffusion," 4 to 20 for "Primitive Defenses," 6 to 30 for "Aggression," and 7 to 35 for "Moral Values." The total score of the Japanese version of the IPO ranges from 37 to 185. In this study, we used the Japanese version of the IPO.

Depressive level: The SDS is a self-report measure that consists of 20 items on a 4-point scale which asks the frequencies of depressive symptoms during the past week, from "never = 1" to "almost always = 4." Using a Japanese university student population, Kitamura et al. [49] reported a three-factor structure for the scale: affective, cognitive, and somatic factors. The numbers of items which had a moderately significant high factor loading (factor loading of 0.4 or more) were seven, four, and three items, for affective, cognitive, and somatic factors, respectively. The remaining six items did not have moderately significant high factor loadings on any of the above factors. In this study, SDS somatic category items were not used because they were more relevant in clinical respondents [39]. Furthermore, there is a risk that respondents with somatic disease are erroneously labeled as those with a higher frequency of depressive affect [37,40]. Furthermore, as explained, one of the purposes of this study was examining the depressed affect of individuals with BPO, SDS affect

category items (seven in total) were chosen for assessing affect. This selection was beneficial for reducing the respondents' burden. (two examples: "I feel down-hearted and blue"; "I am more irritable than usual"). The higher the SDS affective category score, the higher the frequency of depressive affect.

The most stressful negative life event (NLE): Participants were asked to recall the most stressful NLE they experienced between the previous wave and the current wave. This was assessed by an ad hoc item: "Consider the most undesirable, upsetting, depressing, or saddening event you experienced since the last questionnaire and score its impact on you from 0 (not stressful at all) to 100 (extremely stressful)." The respondents were also asked the following question: "Please check any negative life events you experienced (in addition to the most undesirable, upsetting, depressing, or saddening event) in the following subcategory list."

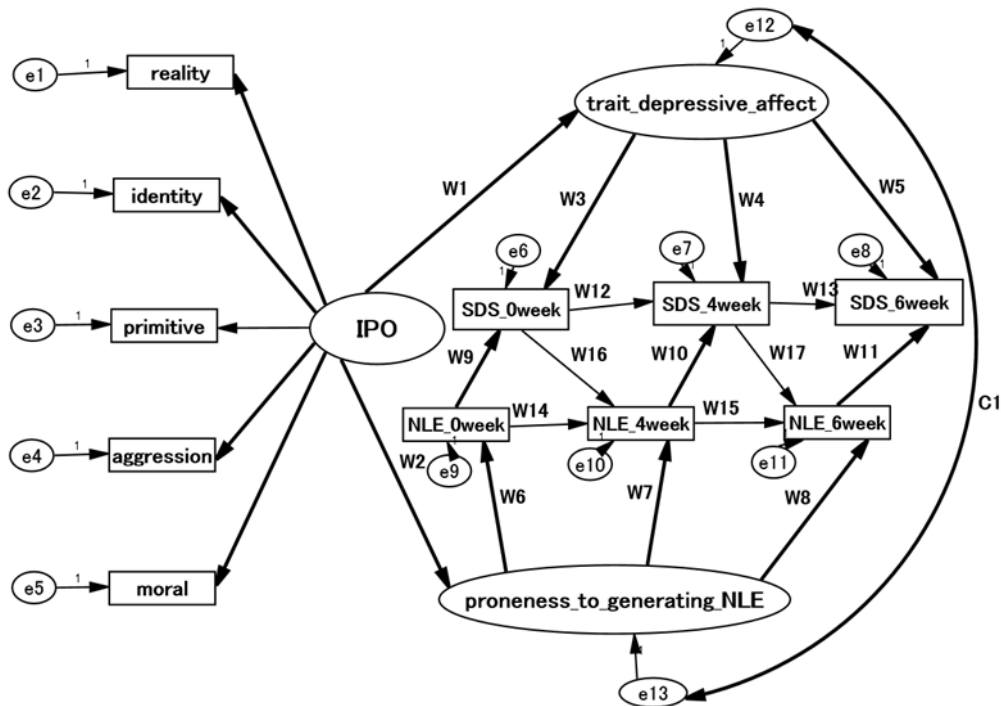
1. NLEs associated with interpersonal relationships (including relationships with family members, peers, and romantic relationships),
2. Lack of free time,
3. Difficulties with academic achievement,
4. Personal health problems,
5. Family members' health problems,
6. Problems related to future aspirations,
7. Economic problems.

Hypothesized model

In our hypothesis model shown in Figure 1, trait depressive affect as an innate personality characteristic is premised as a latent variable, "trait depressive affect," because it is impossible to assess directly. The observed variables (SDS_0 week, SDS_4 week, and SDS_6 week) in Figure 1 are the directly assessed depressive affects. They are the sum of trait depressive affect (the latent variable) and state depressive affect, which includes the depressive affect component caused by the NLE preceding each assessment point (W9-11) as well as the other component expressed by error variables (ϵ_6-8). To evaluate the possible influence of the IPO on "trait depressive affect," a causal coefficient was predicted (W1).

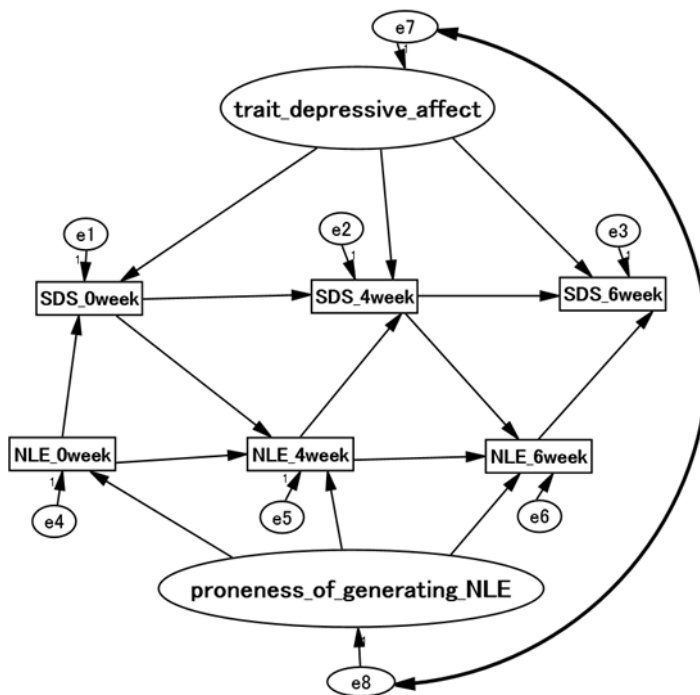
In the same way, NLE_0 week, NLE_4 week, and NLE_6 week in Figure 1 are the NLE scores directly assessed by the respondents. The latent variable "a proneness to generating NLE" is an unobserved variable, which is expected to determine the individual's tendency to generate NLEs. To evaluate our first hypothesis concerning the contribution of BPO to NLE generation, the direct influence of the IPO (an indicator of borderline personality organization) on the proneness to generating NLEs was presumed (W2). To ascertain whether Hammen's stress generation model fit our data, chain reaction pathways between observed variables "SDS" and "NLE" were hypothesized (W9-11, W16, 17).

We developed Figure 2 to help determine whether individuals with higher levels of BPO showed greater depressive reactions to NLEs. In this model, we classified respondents into three categories based on their BPO levels, then conducted a simultaneous analysis of multi-groups.



SDS_0 week, 4 week, 6 week stand for SDS affective category score at zero, fourth, and sixth week points

Figure 1: Hypothesis diagram for the causal relationships between IPO, trait depressive affect, and proneness to generating NLEs.



SDS_0 week, 4 week, 6 week stand for SDS affective category score at zero, fourth, and sixth week points

Figure 2: Hypothesis model for simultaneous analysis of multi-groups: examining the difference between high and low IPO score groups in depressive reactions caused by NLEs.

Statistical analysis

Respondents were first classified into three groups of roughly equal size depending on their IPO scores. The high IPO group was composed of individuals with IPO scores above 78, the middle IPO group contained individuals with IPO scores between 60 and 78, and the low IPO group included individuals with IPO scores below 60. Differences between the three groups in terms of most distressing NLE score and SDS affective category scores were evaluated for statistical significance by ANOVAs followed by post-hoc comparison. The chi-square test was conducted to confirm the relationship between the frequency of responses in each NLE subcategory and the IPO scores. After these procedures, the relationship between IPO, depressive affect, and proneness to generating NLEs was explored using structural equation modeling. Our hypothesis is demonstrated in Figure 1. Whether or not the depressive reaction to an NLE differed between the high and low IPO groups was assessed by a simultaneous analysis of multi-groups (Figure 2).

Results

The mean scores (SD) of the most stressful NLEs were 35.6 (31.2), 35.6 (30.7), and 41.1 (30.2) for NLE_0 week, NLE_4 week, and NLE_6 week, respectively. Similarly, the mean scores (SD) for SDS_0 week, SDS_4 week, and SDS_6 week were 12.0 (5.1), 11.8 (4.9), and 11.9 (5.2), respectively. The mean score (SD) of the total IPO was 72.1 (20.7). For comparing male and female respondents in the magnitude of depressive affect, IPO score, and intensity of NLEs, t-test was conducted. There was found to be no significant difference regarding the IPO total score between male and female respondents. On the other hand, NLE scores as well as SDS affect category scores on all three occasions were higher among female than male respondents (Table 1).

The mean scores of the most stressful NLEs and of the SDS for the three IPO groups are demonstrated in Table 2. ANOVAs found differences between the groups in terms of the mean scores of NLEs and of the SDS affective category at every occasion (Table 2). The results of post-hoc comparison using Bonferroni correction showed

that the differences between the high and low IPO groups in terms of NLE and SDS affective category scores were statistically significant at each time point. In addition, the differences in SDS affective category scores between the high and middle IPO groups and between the middle and low IPO groups were also significant on every occasion. On the other hand, the differences between the high and middle IPO groups in terms of NLE scores were statistically significant only at week 4, and the difference between the middle and low IPO score groups were statistically significant only at week 0.

The relationship between IPO scores and the frequency of NLE subcategory responses

Table 3 shows the number of participants (classified according to their IPO scores) who experienced each subcategory of NLE at the 0-week, 4-week, and 6-week time points.

A dependent association between IPO score and the experience of “interpersonal relationship-related NLEs” was found only at 0 weeks (NLE_0 week), but not at 4 or 6 weeks. In the same way, “lack of free time” was dependent on IPO score only at 0 weeks. “Problems related to future aspirations” were dependent on IPO score on all three occasions. “Economic problems” were correlated with IPO score only at 6 weeks.

The other subcategories of NLEs, “difficulties in academic achievements,” “personal health,” and “family members’ health,” were independent of IPO scores (Table 3).

The relationship between IPO, depressive affect, and proneness to generating NLEs

As explained in the Methods section, the hypothesis model in Figure 1 was verified by structural equation modeling (Figure 3). Goodness of fit was determined using the Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), and Root Mean Square Error of Approximation (RMSEA). The model showed the best fit (GFI: .97, AGFI: .95, RMSEA (90% CI): 0.04 (0.02–0.16)) when two causal coefficients were presumed to be zero, that from “SDS_0 week” to “NLE_4 week,” and from “SDS_4 week” to “NLE_6 week.” That is to

Table 1: Comparisons between male and female groups on the each variable.

	Male (N=66)	Female (N=284)	t value
	Mean score (SD)		
IPO total score	71.3 (21.7)	72.3 (20.5)	-0.4**
SDS affect category score 0 week	10.3 (4.2)	12.4 (5.3)	-3.1**
SDS affect category score 4 week	10.2 (4.0)	12.2 (5.0)	-3.0**
SDS affect category score 6 week	10.0 (4.2)	12.3 (5.4)	-3.3**
NLE 0 week	26.2 (26.3)	37.7 (31.9)	-2.7**
NLE 4 week	28.2 (27.7)	37.4 (31.1)	-2.2*
NLE 6 week	31.7 (27.6)	43.2 (30.5)	-2.8**

***<.001, **<.01, *<.05

Table 2: Mean scores of the most stressful NLEs and mean SDS affective category scores for the three IPO score-based groups.

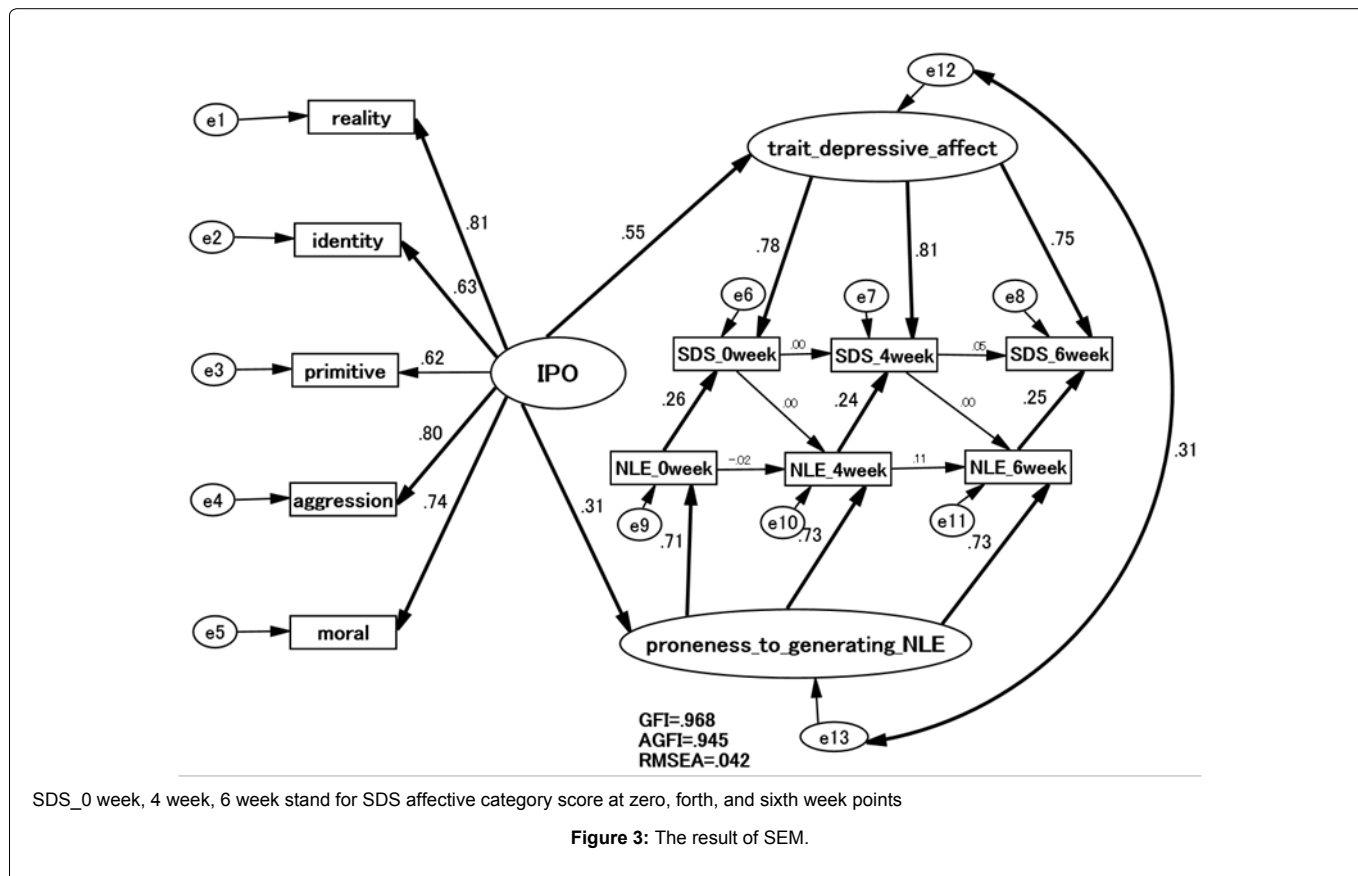
	High IPO group (N =119)	Middle IPO group (N =115)	Low IPO group (N =116)	ANOVA F value
Mean score (SD) of the most stressful NLE at 0 weeks	43.5 (33.0)	36.5 (29.4)	26.5 (28.9)	9.14***
Mean score (SD) of the most stressful NLE at 4 weeks	44.1 (33.4)	34.2 (28.4)	28.4 (27.9)	8.26***
Mean score (SD) of the most stressful NLE at 6 weeks	47.7 (30.8)	41.5 (29.2)	33.8(29.3)	6.38**
Mean score (SD) of the SDS affect category at 0 weeks	14.7 (5.9)	11.6 (4.7)	9.7 (3.1)	34.27***
Mean score (SD) of the SDS affect category at 4 weeks	14.0 (5.7)	11.7(4.3)	9.6 (3.2)	28.10***
Mean score (SD) of the SDS affect category at 6 weeks	14.3 (6.2)	11.7 (4.6)	9.6 (3.4)	26.6***

** p < .01, *** p < .001

Table 3: The number of respondents who experienced each subcategory of NLE for each IPO group (Respondents could select more than one NLE).

	High IPO group (N = 119)	Middle IPO group (N = 115)	Low IPO group (N = 116)	Chi-square
0 weeks				
Interpersonal relationship NLEs	50 (42.0%)	43 (37.4%)	29 (25.0%)	8.00*
Lack of free time	16 (13.4%)	9 (7.8%)	3 (2.6%)	9.42**
Difficulties with academic achievement	33 (27.7%)	31 (27.0%)	24 (20.7%)	1.85
Personal health problems	12 (10.1%)	13 (11.3%)	14 (12.1%)	0.24
Family members' health problems	3 (2.5%)	5 (4.3%)	5 (4.3%)	0.72
Problems related to future aspirations	12 (10.1%)	5 (4.3%)	2 (1.7%)	8.39*
Economic problems	10 (8.4%)	10 (8.7%)	7 (6.0%)	0.70
4 weeks				
Interpersonal relationship NLEs	54 (45.4%)	51 (44.3%)	39 (33.6%)	4.08
Lack of free time	16 (13.4%)	16 (13.9%)	7 (6.0%)	4.59
Difficulties with academic achievement	46 (38.7%)	37 (32.2%)	32 (27.6%)	3.30
Personal health problems	11 (9.2%)	14 (12.2%)	9 (7.8%)	1.33
Family members' health problems	2 (1.7%)	3 (2.7%)	3 (2.6%)	0.30
Problems related to future aspirations	12 (10.1%)	5 (4.3%)	3 (2.6%)	6.72*
Economic problems	8 (6.7%)	9 (7.8%)	5 (4.3%)	1.27
6 weeks				
Interpersonal relationship NLEs	43 (36.1%)	48 (41.7%)	34 (29.3%)	3.90
Lack of free time	19 (16.0%)	17 (14.8%)	10 (8.6%)	3.18
Difficulties with academic achievement	55 (46.2%)	55 (47.8%)	52 (44.8%)	0.21
Personal health problems	11 (9.2%)	13 (11.3%)	5 (4.3%)	3.94
Family members' health problems	1 (0.8%)	5 (4.3%)	1 (0.9%)	4.82
Problems related to future aspirations	12 (10.1%)	3 (2.6%)	4 (3.4%)	9.68*
Economic problems	8 (6.7%)	9 (7.8%)	0 (0%)	9.01*

Note. * p < .05, ** p < .01, *** p < .001



say, SDS_0 week did not have a significant influence on NLE_4 week, and SDS_4 week did not influence NLE_6 week, a result at odds with Hammen's stress generation model (Figure 3).

In accordance with our hypothesis, the IPO had a significant impact on proneness to generating NLEs (standardized causal coefficient = .31, $p < .001$) as well as on trait depressive affect (standardized causal coefficient = .55, $p < .001$).

The correlation between the error variables of trait depressive affect and proneness to generating NLEs was significant (standardized covariance between the two variables = .31, $p < .001$).

Simultaneous analysis of multi-groups

Analysis was conducted to determine the influence of BPO severity on the depressive reaction to an NLE and on NLE generation caused by depressive mood (Figure 2). The results demonstrated that there was no difference in NLE-SDS interaction between the high and low IPO score groups. A significant difference was identified only in the covariance between the error variables of trait depressive affect and proneness to generating NLEs (the standardized covariance of the high IPO group was .47 and that of the low IPO group was .18, yielding a critical ratio of 2.39). A GFI of .97, AGFI of .86, and RMSEA (90% CI) of 0.08 (0.04–0.12) indicated that this model appropriately suited the data.

Discussion

As to the gender differences, females reported NLEs and depressive mood as more severe. It cannot be clear in this research whether the NLEs reported by female respondents were those recognized as NLEs due to their pessimistic cognition, or if they were actually caused. However, it is more socially acceptable for women to depend on others compared to men, and so they might report negative events and affects more freely than men. On the other hand, men might think that it is not desirable to reveal negative events and affects to others, even in anonymous questionnaires.

In accordance with our hypothesis, the results demonstrated that BPO contributes to the generation of NLEs. Concerning the relationship between BPO and NLE subcategories, the higher the IPO score, the more individuals experienced NLEs related to future aspirations, interpersonal relationships, economic problems, and lack of free time. Among these in particular, problems related to future aspirations correlated with IPO scores on all three occasions. This suggests that people with BPO may find it difficult to establish direction and motivation regarding their future. This would be because of their restricted ego function caused by primitive psychological defenses, followed by identity diffusion. Of three waves, on one occasion, the higher the IPO group, the more reported lack of free time, suggesting that an individual with higher level of BPO is deficient in time management, likely because of poor adaptability and flexibility to their environment, for which conflict free ego sphere [27] is responsible. Clinicians should support their undermined ego function until it is more integrated. We also obtained one result where a higher IPO group tended to report comparatively high interpersonal NLEs. Clinically, it is important to clarify the nature of the interpersonal interactions that result in the NLEs reported by patients with BPO. Furthermore, it is crucial for these patients to learn that they tend to play some role in the generation of NLEs. Clinicians should be empathetic to the patients' unconscious needs

and as to how these needs require the patients to adopt cognitions and behaviors that unintentionally generate NLEs.

Another interesting outcome of this study was that BPO influenced trait depressive affect, which in turn was significantly related to proneness to generating NLEs. The result of the simultaneous analysis of multi-groups demonstrated that depressive reactions to NLEs did not differ between the high- and low-BPO groups. From these findings, we can see that the depressive mood experienced by people with BPO is more trait-related than reactive. That is to say, the depressive mood experienced by an individual with BPO is already ingrained in their personality, as the consequence of interaction between disposition and environmental effect during personality development. According to Kernberg's theory, trait depressive affect can be a function of the punitive superego and weak ego in combination. It is probable that the previous research which reported the positive relationship between IPO subscale scores and depressive level had detected the relationship of BPO level with trait depressive affect rather than state depressive affect [28,43]. Regarding the result that the magnitude of a depressive affect caused by NLE did not depend on BPO level, it can be interpreted that the affects which usually manifest following object-loss are not depressive, in the case of an individual with BPO. In that situation, the bad threatening object image would dominate in place of the good one, resulting in discharged anger and aggression as well as subsequent anxiety and persecutory feeling. However, an alternative interpretation is possible. In this study, we used Japanese university students rather than patients with clinically diagnosed personality disorders, and we compared high and low IPO score groups in terms of depressive reaction caused by NLEs. If a clinical personality disorder sample had been the basis for comparison [3,4,6-8], it is probable that we would have obtained different results regarding depressive reactions caused by NLEs.

The results of this study were not consistent with Hammen's stress generation model (1991) [18,27,46]. SDS_0 week and SDS_4 week had no influence on NLE_4 week and NLE_6 week, respectively, though each SDS was influenced by the antecedent NLE. The follow-up duration of previous studies supporting Hammen's stress generation model regarding the concatenated interaction between depressive mood and NLE, was one year [18,46]. In our study, the follow-up duration was only six weeks, which was probably insufficient to cause NLEs due to a continual depressive mood, even if it was sufficient to detect depressive mood immediately following an NLE. Furthermore, in this study, our target population was university students. Even though some students scored relatively highly in the affect category of the SDS, their cognition may not have been distorted, which allowed them to avoid defining and evaluating particular experiences in pessimistic ways. Additionally, if their cognition was not overly disturbed and their social behavior was not affected in a negative way, then the result may have been the generation of fewer NLEs. These factors are considered to have kept the students from experiencing severe NLEs. Therefore, despite the range of the university students' SDS affective category scores, there appeared to be no corresponding range in the severity of NLEs. Different results may have been obtained if we had chosen a clinical sample.

Finally, the limitations of this study should be noted. First, this study was not based on in-depth face-to-face interviews. Therefore, we were unable to distinguish whether each respondent's cognition, attitude, and behavior contributed to the occurrence of NLEs. Second,

the mean age of our target population was 18.9 years old. Respondents' personalities were still developing. Therefore, it might be problematic to apply the results of this study to other generations. Third, we did not have the demographic data of students who failed to attend the classes and of those who declined to participate in this study, so we could not compare them with those who agreed to participate. It is probable that their absence or choice not to participate was related to their personality or to mental problems, which may be an obscuring factor. Fourth, it is questionable whether depressed mood that continues for only six weeks can be regarded as strictly trait-based. The latent variable in Figures may include a "state" depressive affect component. Long-term follow-up studies are necessary. Despite these limitations, this study is useful both for clinicians and researchers as a preliminary study examining the relationship between BPO, NLEs, and depression in young adults in Japan. In conclusion, in this sample of Japanese university students, BPO had an impact on NLE generation and trait depressive affect. It did not affect the magnitude of the depressive reaction to NLEs.

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Author Affiliations


Top

¹Kumamoto University Graduate School of Life Sciences, Kumamoto, Japan

²Kyushu University of Nursing and Social Welfare, Tamana, Japan

³Kitamura Institute of Mental Health Tokyo, Tokyo, Japan

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