A R T I C L E S

MEASURING PERSONALITY DEVELOPMENT
IN THE AFTERMATH OF CRITICAL LIFE EVENTS:
A PRELIMINARY LONGITUDINAL
MIXED METHODS STUDY

Izabela Kaźmierczak

Institute of Psychology, Maria Grzegorzewska University, Warsaw

This article aims to conceptualize, operationalize, and empirically validate the concept of *actual* personality development in the aftermath of a Critical Life Event. Two qualitative tools have been elaborated: the Structured Critical Life Events Interview and the Coding System for Personality Development. They were empirically verified in a preliminary longitudinal mixed methods study ($N = 40$ participants, $n = 1440$ narratives) with three measurements in one year referring to the Transition Cycle (Hopson & Adams, 1976). For assessing reliability the Intraclass Correlation Coefficient (ICC) and Cronbach's α were assessed. The convergent validity of the tools was determined by correlating the results with (1) linguistic structure of participants' verbalizations and (2) the questionnaires measuring similar behaviours and features. The research showed good psychometric properties of the tools. Moreover, they better identified personality growth and the specific dynamics of personality changes (positive and negative) than the Post-traumatic Growth Inventory (Tedeschi & Calhoun, 1996).

Keywords: personality development; positive disintegration theory; coding system for personality development; critical life events interview; psychometrics.

The term "positive disintegration" reflects the vast range of potential changes in personality. To achieve the desired effect in terms of our own development, we must first break down some integral, original whole to be able to make a new mosaic, forming the more excellent, creative, and valuable person we become. Hence, the Theory of Positive Disintegration (TPD; Dąbrowski, 1967, 1972, 1979, 1996) captures and appreciates the dynamics of co-occurring positive and negative changes at the same time. In this way it potentially overcomes the limitation of the majority of post-traumatic growth (PTG) approaches (see Jayawickreme & Blackie, 2014) focusing on positive changes only and leading to positive response bias (Tomich & Helgeson, 2004), and thus of overtly positive reports of growth (Park & Lechner, 2006; see illusory PTG or Boals, 2023). It is worth noticing that many studies have not supported Tedeschi and Calhoun's (1996) assumption that PTG emerges gradually in the adjustment process (see Tennen & Affleck, 2002).

These attitudes make the theory potentially very interesting, especially in the context of readaptation and/or personality development in the aftermath of Critical Life Event (CLE). However, one severe hurdle to the investigation, study, and application of the Theory of Positive Disintegration is the fact that no suitable psychological qualitative instrument exists to measure any Dąbrowskian constructs well and allow to observe some changes in the meaning attributed to a recent CLE on the timeline at the same time. The Dąbrowski's idea was to ask volunteers to write autobiographies and open-ended responses to Verbal Stimuli (VS) to look for key emotional events to assess the type and level of development (see Piechowski, 2008). The majority of good quality tools operationalizing TPD include some questions or sentences to allow for open-ended responses, however, they are not directly related to CLE (e.g., Gage et al., 1981; Miller & Silverman, 1987). For the review of existing personality development approaches and tools please see Supplemental Material 1.

At the same time, the biographical method, incorporated in the study, allows one to grasp the meaning of many given events (including the most recent CLE) and their consequences for a person due to indirect questions measuring changes that are not always observed by respondents themselves. Research has shown that sufferers are not accurate in their perceptions of change when compared to how they really have changed (Blackie et al., 2017; Gangel et al., 2023; Owenz & Fowers, 2019). What is more, recalling the state before the event and determining how much they have changed since the event and to what extent this change was caused solely by the trauma is a demanding task for respondents (Jayawickreme & Blackie, 2014). In consequence, perceived

and actual growth have been conflated in PTG literature (Boals, 2023; Infurna & Jayawickreme, 2021). This, in turn, justifies the search for a qualitative tools that will explain and predict the wider scope and dynamics of personality changes (Jayawickreme & Blackie, 2014; Jayawickreme et al., 2020) after CLEs and can be measured more independently of the respondents' declarations. The article is the result of these research endeavors.

The Theory of Positive Disintegration: Conceptualization

The Theory of Positive Disintegration (TPD; Dąbrowski, 1964, 1967, 1972, 1996) is an influential theory of personality development. It was called "a personality theory for the 21st century" (Mendaglio, 2008). Dąbrowski (1967) states: "The process of personality building is characterized by a wandering 'upward' toward an ideal … and the gradual acquiring of a structure within which … general human traits appear … [where] … the instincts of a human being are to a considerable extent subject to the principle of dynamic disintegration … in order to unify within the process of development in a homogeneous personality structure" (pp. 54–55). There are five levels of development outlined by his theory: (I) Primary Integration, (II) Unilevel Disintegration, (III) Spontaneous Multilevel Disintegration, (IV) Organized Multilevel Disintegration, and (V) Secondary Integration (Dąbrowski, 1975, 1979). For the description of the levels please see Supplemental Material 1. The levels are not successive stages but rather different types of development. Furthermore, due to its limited developmental potential level I is not the starting point of growth in Dąbrowski's sense and its breakdown may lead up to unilevel disintegration (Piechowski, 2014). Besides, the developmental journey can start anywhere.

The transition from one level to another is not automatic and does not correlate with age or maturation. Within the TPD it might be initiated by a critical life event (CLE), which is consistent with contemporary research (e.g., Edmonds et al., 2008; Park & Folkman, 1997; Roberts & Mroczek, 2008). However, it is not the experience of stress *per se* that causes development. In fact, the process of disintegration can end in three possible ways: (1) personality structure reverts back to the pre-crisis state (*recessive*), (2) the individual falls back to even lower level of development (*regressive*) and (3) the person achieves a higher level of personal development (*progressive*). It is the engagement of the following dynamisms that leads to positive outcome: dissatisfaction with oneself, anxiety over oneself, astonishment in oneself, conscious interest in the individual's own mental life and the ability

to develop an ever broader and deeper penetration into it, the Third Factor (which is both a developmental dynamism and a factor of development in its own right), the creation and recognition of relationships, perception of a hierarchy of values and purposes, empathy, self-awareness, self-control and self-criticism, self-education, autopsychotherapy, autonomy, authenticity, responsibility, and activation of personal ideal (Dąbrowski, 1967, 1975, 1979).

These developmental factors do not correlate linearly and create an intricate web of interrelationships, which is unique for each person (Harper et al., 2017). Hence, the TPD might solve the inconsistencies in recent observations of survivors' reactions ranging from decline to improvement or even no changes at all (e.g., Bleidorn et al., 2019; Chopik et al., 2020) and explain what they might depend on. For further information on the contribution of the TPD to understanding personality development in comparison with other existing approaches please see Supplemental Material 1.

The Theory of Positive Disintegration: Operationalization

The process of tool creation consisted in selecting and developing a biographical method that would allow us to identify a wide scope of key emotional events (including a recent CLE) referring to dimensions of the TPD and elaboration a coding system for personality development reflecting the Dąbrowski's assumption of multilevelness of psychic functions.

Critical Life Events Interview

Among the ways of measuring the concept recommended by Dąbrowski (1979) is a biographical method. This approach, incorporated in the study, enables measurement of the personality structure on a deeper level than based on the items of existing questionnaires. As a result, the structured the Critical Life Events Interview (CLEI) has been elaborated. The interview's questions were formulated indirectly. They correspond respectively to the following main dimensions of personality development: the functions and structure of (1) feelings, (2) drives, and (3) values, (4) self-awareness level, (5) ability to solve internal conflicts, (6) ability to manage interpersonal conflicts, (7) aspiration for development, (8) creativity, and (9) reaction to stress. It should be noted that Dąbrowski directly distinguished only the first three of them; however, in the Theory of Positive Disintegration one can see remaining dimensions along with the differentiation of their indicators depending on the personality development level (PDL).

The interview was based on two qualitative instruments: the Life Story Interview (LSI; McAdams, 2001) and the Guided Autobiography (GA; Foley Center for the Study of Lives, 1997). In the process of construction of the CLEI, the procedure of LSI was shortened to the key life scenes part. Moreover, only the most relevant key life scenes from the perspective of TPD were used such as high point, low point, turning point, and life challenge. Moreover, such GA episodes as continuity, morality, decision, and goal were chosen to enrich the constructed CLEI as they referred to the remaining dimensions of personality development.

The CLEI questions (see Supplemental Material 2) refer to the following dimensions of TPD: (1) High Point, (2) Low Point, (3) Most Recent Negative Critical Life Event (functions and structure of feeling), (4) Goal (functions and structure of drives), (5) Morality (functions and structure of values), (6) Life Turning Point, (7) Continuity (level of self-awareness), (8) Critical Decision (ability to solve internal conflicts), (9) Interpersonal Conflict (ability to manage interpersonal conflicts), (10) Activity (aspiration for development), (11) Experience of Creativity (creativity), and (12) Life Challenge (reaction to stress/change). Dimensions such as "the functions and structure of feeling" were matched to three positions of the CLEI (1–3) to acknowledge and observe a wider range of feelings. Also, "level of self-awareness" was operationalized through two positions of the CLEI (6 and 7) to capture the awareness of both what has been changed and what has remained stable in personality over time.

Coding System for Personality Development

The Coding System for Personality Development (CSPD) reflects Dąbrowski's assumption of multilevelness of psychic functions. They constitute independent dimensions of personality development: (1) functions and structure of feeling, (2) functions and structure of drives, (3) functions and structure of values, (4) self-awareness level, (5) ability to solve internal conflicts, (6) ability to manage interpersonal conflicts, (7) aspiration for development, (8) creativity, and (9) reaction to stress/change. Each psychic function was characterised by Dąbrowski (1967, 1979) and operationalized in the study based on specific more or less advanced dynamisms related to separate PDLs (Dąbrowski, 1975, 1979; see the shapers of development, 1996).

Indicators of personality development included in the coding protocol refer to the aforementioned criteria of positive disintegration (i.e., dynamisms of the last three levels of personality development; positive changes) and nega-

tive disintegration (i.e., indicators of pathological changes; Dąbrowski, 1975). Coders determine whether or not there is evidence of each of the five levels of personality development separately for each interview question referring to one concrete dimension. If evidence exists for the level in the narrative, then the narrative receives a score from 0 to 5, where 0 denotes Primary Integration—unsocialized type structure, and 5 denotes Secondary Integration. If no evidence exists, the narrative does not receive any score (for more details please see Supplemental Material 3).

Empirical Examination of the Qualitative Tools

Apart from operationalization of TPD, the main study objective was to empirically verify the created qualitative tools. The evaluation employed reliability and convergent validity analyses.

METHOD

Participants

The recruitment method was based on the recruitment advertisement disseminated on several websites with paid surveys offers. Participants were paid $50. The following recruitment criteria were adopted.

1. Being up to 2 months after the occurrence of a recent negative CLE (i.e., a situation of significant imbalance between the resources of an individual and some elements of the environment that required immediate changes to the so-called ordinary pattern of life; Sęk, 1991). A CLE was distinguished from a traumatic event understood in accordance with the DSM-IV (First et al., 2002) during the recruitment meeting. People after traumatic events were not included in the survey as possible posttraumatic stress disorder and its dynamics would alter the process of disintegration in an uncontrollable way. The traumatic character of the event was assessed according to criterion A posttraumatic stress disorder. Technically, I relied on the volunteers' declarations, i.e., direct answers to the questions referring to the following A criterion: The person has been exposed to a traumatic event in which both of the following were present: (a) the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or

a threat to the physical integrity of self or others; (b) the person's response involved intense fear, helplessness, or horror.

2. Age from 22 to 45 (i.e., early adulthood; Levinson, 1996).

3. Mental health: As in the aftermath of a CLE it is reasonable to anticipate the occurrence of some mood disorders, volunteers were allowed with either (1) lowered mood or adjustment disorder only or (2) major depressive disorder. At the same time, volunteers with symptoms meeting the criteria of any other mental disorders (including personality disorders) were not invited, but they could participate in another study. The justification of the criteria was to control the mood disorder and prevent intervening other disease symptoms with disintegration processes. Particularly, the rigidity of non-adaptive cognitive, emotional and behavioural patterns of psychological functioning specific to different kinds of personality disorders could have an uncontrollable impact on emotionality, drive, behaviour and level of self-awareness (dimensions of Dąbrowskian Theory). The mental state was assessed by a trained clinician equipped with standardised diagnostic tools described below.

4. Neither psychotherapy nor pharmacotherapy directed by professional interventions but rather a "spontaneous adaptation path" to a recent CLE. Among 77 volunteers who applied for the study, 40 participants were selected based on the recruitment criteria (23 women and 17 men) aged from 22 to 44 ($M = 30.43$, $SD = 5.82$). Fifty percent of them had high education level, 32.5% were undergraduate/postgraduate students and 15% participants completed high school and 2.5% of them completed primary school. All of them were White. The participants reported the loss of either a long-term relationship (46.2%), their own health (17.9%), a loved one's health (10.3%), work (23.1%) or an unborn child (2.6%).

Procedure

To empirically verify hypotheses, a longitudinal repeated narration study ($N = 40$) was conducted three times corresponding to the Transition Cycle (Hopson & Adams, 1976):

– t_1: up to two months after a CLE (*the provisional adjustment phase*),

– t_2: three months later and around five months from a CLE (*the inner crisis phase*),

– t_3: 8+ months from a CLE (*the reconstruction and recovery phase*).

Participants were interviewed at each stage (i.e., 3 times) about 1 hour and asked to fill in a set of questionnaires (about 25 minutes).

Measures

Psychological outcomes were assessed using qualitative and quantitative methods. At the qualifying meeting, volunteers were selected for the survey based on the Polish version of the Structured Clinical Interviews for DSM-IV Axis I (SCID-I; First et al., 2002) and Axis II (SCID-II; First et al., 1997) Disorders. Specifically, the psychological diagnosis was made using Screening Modules for Axis I and II Disorders and, if necessary, relevant Diagnostic Modules Sheets. Based on this criterion participants were divided into two groups: (1) non-clinical (i.e., lowered mood or adjustment disorder only and (2) with depression (the diagnosis of major depressive disorder).

In the next step, personality development was assessed with the CLEI (see Supplemental Material 2). Each recorded interview was then transcribed verbatim. All coding of the PDL was carried out by two independent peer judges (psychologists with qualitative research experience). They used the CSPD (see Supplemental Material 3).

To analyse participants' language LCM typology (Semin & Fiedler, 1991) the Polish LCM dictionary (Wawer & Sarzyńska, 2018) was used as the basis. In order to analyse the language samples a natural language-processing (NLP) pipeline was employed with a number of connected modules: the morphosyntactic analyser Morfeusz (Woliński, 2014), the morphosyntactic disambiguation module Concraft-pl (Waszczuk, 2012), dependency parser (Jurafsky & Martin, 2008) based on a Polish-language MaltParser engine model (Wróblewska, 2014). The modules communicate via the Thrift framework. The implementation has been integrated into the Multiservice NLP toolbox (Ogrodniczuk & Lenart, 2012).

The level of abstractness was determined according to the formula described in Kaźmierczak et al. (2022). Word sentiment was calculated based on a dictionary of 3276 lemmas, divided into 1494 positive words and 1774 negative ones, which is a part of the Sentipejd tool (Buczyński & Wawer, 2008). To compute syntactic complexity there was employed a metric for language comprehension difficulty (mean dependency distance, MDD; see Liu, 2008), which is the measure that use dependency parsing information and the order of words in a sentence (the formula can be found in Sarzyńska-Wawer et al. 2023). The language coherence describes the degree of similarity between phrases. For each phrase, its vector representation was counted: each word was replaced with a vector using word2vec (Mikolov et al., 2013) and then these vectors of individual words were averaged within each phrase. The similarity between phrases was calculated using the cosine of the angle between the vectors rep-

resenting the phrases. The higher this measure is, the more similar the phrases are. First order (fo; the phrases of direct neighbours are compared) and second order (so; the phrases of indirect neighbours are compared) are statistics describing the average similarity between phrases counted with the cosine.

Apart from the qualitative methods, the main standard psychometric tools were:

– the Post-traumatic Cognitions Inventory (PTCI; Foa et al., 1999), adapted by Dragan, Gulcz, and Wójtowicz (2005);

– the Post Traumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996), adapted by Ogińska-Bulik and Juczyński (2010);

– the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983), adapted by Majkowicz, Walden-Gałuszko, and Chojnacka-Szawłowska (1994); the tool was applied to measure depression and anxiety symptoms from the last week;

– the Beck Depression Inventory (BDI; Beck et. al, 1961; Czapiński, 1998); it was used to measure the intensity of depressiveness present within the last month.

All of the above questionnaires are standard psychological questionnaires with satisfying psychometric properties.

Data Analysis Strategy

The qualitative tools were developed based on the general psychometric principles of scale construction (Dyer, 2006; Rattray & Jones, 2007). In the coding process, narratives were translated into numbers considering the presence/the intensity or absence of analysed indicators of PD. Statistical analyses were performed with IBM SPSS Statistics 27.

RESULTS

Data Analysis

In the first step, the qualitative analysis of narratives was performed by two peer judges to verify CSPD. As the construct of PDL was rated on a 6-point ordered scale, the Intraclass Correlation Coefficient (ICC) was chosen for assessing interrater reliability (Shrout & Fleiss, 1979). In t_1, the ICCs of coding all aspects of PD ranged from .76 to .87. The ICC(2,k) for the total PDL was .92. In t_2, the ICCs of coding all other aspects of PD were between .74 and .87. The ICC(2,k) for the total PDL was .90. In t_3, besides the functions and structure

of drives (ICC[2,k] = .69), the ICCs of coding all other aspects of PD were between .71 and .95. The ICC(2,k) for the total PDL was .89. Based on the average total protocol ratings, each participant was allocated to one of five PDLs separately for all measurements (see Table 1).

Table 1

Distribution of Participants to the PDL in Three Measurements in Time

PDL	N (t_1)	N (t_2)	N (t_3)
Primary Integration: asocialized type	0	0	0
Primary Integration: socialized type	5 (12.5%)	3 (7.7%)	2 (5.1%)
Unilevel Disintegration	25 (62.5%)	20 (51.3%)	11 (28.2%)
Spontaneous Multilevel Disintegration	10 (25%)	16 (41%)	20 (51.7%)
Organized Multilevel Disintegration	0	0	6 (15.5%)
Secondary Integration	0	0	0

Note. PDL = Personality Development Level, t_1 = the provisional adjustment phase, t_2 = the inner crisis phase, t_3 = the reconstruction and recovery phase of the Transition Cycle.

Then reliability analyses, including all 12 positions of the CLEI, were applied. All outcomes appeared to be above the required threshold of α = .70 (Nunnally & Bernstein, 1994): Cronbach's α = .92 (t_1), Cronbach's α = .89 (t_2), and Cronbach's α = .90 (t_3). Absolute stability was determined with the test-retest method. The score was found to be r = .70 ($p < .001$) between t_1 and t_2, r = .83 ($p < .001$) between t_2 and t_3, and r = .73 ($p < .001$) between t_1 and t_3.

To identify the changes in PDLs between measurements, a one-way univariate repeated-measures ANOVA was run. The analysis revealed significant changes between measurements, $F(2, 76)$ = 30, $p < .001$, η^2 = .44. Post-hoc Bonferroni tests showed that PDL was significantly ($p < .05$) different in all measurements: M = 2.27, SD = .6 (t_1); M = 2.49, SD = .53 (t_2); and M = 2.8, SD = .65 (t_3). More time passed since a CLE corresponded with a higher PDL.

The convergent validity of the tool was determined by correlating PDLs with (1) linguistic structure of participants' verbalizations and (2) the questionnaires measuring similar constructs.

The Language Used

In t_1, partial corelations (with number of words controlled; however it was uncorrelated with PDL) were statistically significant or at a tendency level between PDL and abstractness ($r = .28$, $p = .085$; DAVs: $r = -.32$, $p = .050$), negations ($r = -.37$, $p = .020$), and coherence (fo: $r = .28$, $p = .084$).

In t_2, partial corelations (with the number of words controlled, which was correlated with PDL: $r = .52$, $p = .001$) were statistically significant or at a tendency level between PDL and abstractness ($r = .42$, $p = .009$; DAVs: $r = -37$, $p = .022$; SVs: $r = .29$, $p = .073$; ADJs: $r = .35$, $p = .032$), sentiment (positive words: $r = .40$, $p = .013$), negations ($r = -.43$, $p = .007$), and coherence (fo: $r = .29$, $p = .077$).

Similarly, in t_3, partial corelations (with the number of words controlled, which was correlated with PDL: $r = .40$, $p = .013$) were statistically significant between PDL and the frequency of the words types related to the language abstractness (IAVs: $r = .45$, $p = .005$; DAVs: $r = -.40$, $p = .013$; ADJs: $r = .37$, $p = .022$; however, the correlation coefficient with the abstractness index has not reached the statistical significance in this case: $r = .21$, $p = .207$), sentiment (positive words: $r = .58$, $p = .001$, negations: $r = -.51$, $p = .001$), and coherence (fo: $r = .33$, $p = .043$). Moreover, PDL was associated with complexity: $r = .40$, $p = .012$.

Measuring Similar Constructs

Moreover, (2) the quantitatively encoded PDL occurred to be correlated neither with some emotional state's indices nor post-traumatic cognitions, regardless the measurement. As the mental health status might play a role, we divided the general sample in two groups based on the controlled variable in the project and repeated the analyses.

1. In the non-clinical group: the quantitatively encoded PDL related positively with the intensity of depression symptoms ($r = .43$, $p = .056$) and self-blame ($r = .47$, $p = .038$) in t_2. In turn, in t_3 it correlated with self-blame ($r = .46$, $p < .043$). PTG, measured quantitively, obtained one statistically significant correlate only in t_2: more negative cognitions about others corresponded with higher PTGI scores: $r = -.72$, $p < .001$.

2. In the group with depression: the quantitatively encoded PDL did not correlate with any variables included in the research, regardless of time. To compare, PTGI scores correlated with the aforementioned variables only in the

inner crisis phase: more negative cognitions about self ($r = -.37$, $p = .020$) and higher depressiveness in the last month ($r = -.50$, $p = .030$) corresponded with lower PTGI scores.

Furthermore, Student's t-test showed no significant differences between women and men in terms of PDL, regardless of time: $t(38) = -.42$, $p = .674$ (t_1); $t(37) = -1.00$, $p = .292$ (t_2); and $t(38) = -.32$, $p = .750$ (t_3).

The PDL correlated with the PTGI score not earlier than in t_3 ($r = .34$; $p = .020$). The PTGI score in t_1 ($M = 48.97$, $SD = 21.69$) was significantly lower compared to the norm group ($M = 60.68$, $SD = 19.5$; $t[38] = -3.46$, $p = .002$). Similarly, the average PTGI scores from t_2 ($M = 52.69$, $SD = 19.52$; $t[38] = -2.47$, $p = .015$); only in t_3 it was not significantly different from the norm ($p = .161$). All PTGI scores stayed stable across measurements, $F(2,74) = 2.47$, $p = .091$, $\eta^2 = .06$.

DISCUSSION

Two qualitative tools have been elaborated to examine personality development: the CLEI and the CSPD. They were empirically verified in the present longitudinal study. In the case of total personality development and the majority of its dimensions, the consistency of codings provided by peer judges appeared to be above the acceptable level of reliability by ICC standards (Cicchetti, 1994; Orwin, 1994). These good levels of agreement were achieved regardless of the time passed since the CLE. Reliability analyses including all 12 positions of the CLEI separate for each measurement showed strong internal consistency (Nunnally & Bernstein, 1994) of the tool.

The level of qualitatively measured PD differed between all measurements. The more time that passed since a CLE, the higher the PDL. Participants' personality developed over time, and the elaborated qualitative measures were able to capture the process. At the same time, post-traumatic growth measured by the PTGI stayed stable across the measurements. This suggests that qualitatively measured PD is a better tool for identifying a broader scope of the personality growth than the traditional questionnaire. Hence, it is understandable that qualitatively measured PD correlated with PTGI scores only in the last phase of the Transition Cycle (reconstruction and recovery). It should also be noted that the average PTGI scores measured soon after a CLE and in the inner crises phase were significantly lower compared to the norm group and non-significantly different than the norm group only in the last measurement.

A similar result was obtained by Baillie et al. (2014). Also, Tedeschi and Calhoun (1996) demonstrated that persons experiencing severe trauma reported higher levels of PTG than those who had not experienced such extraordinary events. There are also empirical results supporting the theory that trauma symptoms act as a catalyst for PTG (Baillie et al., 2014). The findings of Morgan and Desmarais (2017) underscore the heterogeneity within experiences of PTG over time. Based on PTGI outcomes, the researchers distinguished four significantly different groups characterized by differential associations between PTG and time since the event: an immediate moderate-growth group that experienced moderate levels of PTG over shorter periods of time, a low-growth group that was characterized by minimal PTG regardless of time, a long-term small-growth group that was primarily characterized by small amounts of PTG over longer periods of time, and a high-growth group that was characterized by high PTG regardless of time. This indicates that PTGI is a good tool for measuring post-traumatic growth in some groups of participants in the aftermath of a traumatic event but not necessarily after a CLE that does not meet the criteria for being traumatic.

It is also reasonable to assume that the systematic growth was identifiable by a qualitative tool because it takes into account also some co-occurring negative changes. Particularly at the beginning of the adaptation process there may be more of them (internal conflicts, dissatisfaction with oneself, etc.), and at the same time, they do not necessarily mean the personality regression or the lack of constructive processes. Meanwhile, the PTGI focuses only on positive changes.

In terms of the language used, as expected, the more abstractive and the more coherent language and the less negations, the higher PDL in the phase of provisional adjustment. The same PDL correlates were obtained in the phase of the inner crisis (with a greater number of connections between the components of abstractness and the PDL). Additionally, the more positive words used in stories, the higher PDL. All results were replicated in the phase of reconstruction and recovery (except for abstractness) and furthermore the PDL was associated with narrative complexity in terms of language comprehension difficulty.

Language abstractness and coherence turned out to be associated with the PDL regardless of the time since the CLE. The positive association of the PDL with abstractness is consistent with the previous research outcomes (Kaźmierczak et al., 2022), while the relationship between the PDL and coherence confirms the Adler and colleagues' (2007a, 2007b, 2008) findings that participants high in ego development describe more coherent stories compared to those with lower PD levels. Positive sentiment gained importance in the inner crises phase and its linkage to the PDL is also consistent with the

existing literature (McAdams et al., 2006; Pennebaker, 1995). In turn, more complex and sophisticated vocabulary became associated with the PDL no sooner than in the reconstruction and recovery stage of the Transition Cycle. Also Lanning et al. (2018) revealed increasing complexity to be co-occurring with higher levels of PD.

Correlates of the qualitatively measured PDL changed depending on the time passed since the recent CLE and the group. In the non-clinical group, in the phase of provisional adjustment the PDL was not systematically related to any emotional state indices or post-traumatic cognitions. However, in the inner crisis phase, it positively correlated with the intensity of depression and self-blame in this group. In this stage of the Transition Cycle (Hopson & Adams, 1976), the reality of the change becomes apparent, and this often provokes depressive mood. This might be associated with feeling that the situation is beyond one's control. There appears a greater awareness of real level of competence in relation to the requirements, which leads to feelings of frustration or confusion about how to handle the change process. An individual might blame herself or himself for the event and/or for ineffective coping with the consequences. Moreover, according to Dąbrowski (1967, 1979), lower levels of disintegration are characterized by strong mental tensions, ambivalence, and instability of feelings. Also, dissatisfaction with oneself, concern about oneself, and the state of one's development, and morality appear. An individual might feel ashamed and guilty. However, having such emotions and cognitions enables further acceptance of the event and taking the next step toward Secondary Integration. In the phase of reconstruction and recovery, the PDL positively correlated only with self-blame in this group. Higher levels of disintegration are related to directing attention to the internal environment and distinguishing what is higher in one's own behaviour from what is lower, which must be reduced or weakened. In this process, self-blame might be a result of this judgment and constitutes a motivation for further mental reconstruction.

At the same time in the clinical group, the quantitatively encoded PDL did not correlate with any variables included in the research, regardless of time, suggesting different mechanisms of personality development in the depressed and the non-clinical groups. Further study is needed to identify them, especially considering the fact that the research on PTG correlates yields inconsistent results from positive, through negative to null relationships between measures of post-traumatic growth and mental and physical health (Jayawickreme & Blackie, 2014). Helgeson et al.'s (2006) meta-analysis revealed that perceiving post-traumatic growth predicted lower levels of depression and higher levels of

well-being. However, the vast majority of effects sizes was small or moderate. Post-traumatic growth was related neither to anxiety, measures of global distress, subjective physical health nor global quality of life. Post-traumatic growth seems to be a better predictor of mental and physical health after a longer time since the event (Helgeson et al., 2006). It is worth also noting that Boals (2023) delivered evidence that the perceived PTG is mostly illusory PTG and the genuine PTG is very rare. It is consistent with Gangel et al. (2023) showing that perceived growth does not serve as a catalyst for positive further change.

Practical Implications

We do not have many provisions for a curriculum of advanced personality growth for highly gifted adults, particularly outside universities. The elaborated tools can be used (1) to help researchers identify adults deeply engaged in multilevel growth to identify and analyse their individual developmental paths and (2) transfer their insights to professionals (e.g., counsellors, psychotherapists) helping them to go even further. Moreover, the tools may be applied (3) to assess the developmental potential before psychotherapy or counselling to predict to what extent personality can grow (see "conserving and transforming" developmental potential; Piechowski, 2008) and, as each level is a large universe with many possible developmental patterns (described in the Coding System for Personality Development), to facilitate the personality grow within levels.

It is recommended to conduct the Critical Life Events Interview (12 key life events) in two parts for the sake of psychological comfort of participants as some questions may provoke emotions. Also for this reason the interview should be conducted by an experienced clinician.

Limitations of the Study

There are some limitations of the study. Although the coding based on the Coding System for Personality Development was consistent among peer judges for the general personality development scores, and all personality dimensions in the phases of provisional adjustment and the inner crises are satisfactory, the functions and structure of drives from the third measurement should be interpreted with caution due to its lower Intraclass Correlation Coefficients. It is advisable to continue searching for the best indicators of personality development derived from the Dąbrowskian theory. The presented psychometric prop-

erties of the tool can be considered preliminary. While the tools achieved criteria of reliability and are related to some emotional and cognitive variables (in the non-clinical group), there is nevertheless considerable room for improvement in the specification of qualitatively measured correlates of personality development. What is more, the project is lacking pre-trauma data and there is no suitable control group without any CLEs. Despite these limitations, it is hoped that using this qualitative tool in future studies will be an important step toward developing empirically testable qualitative measurements of the construct of personality development. This approach will also be a useful addition to the methodological repertoire available to personality development researchers.

REFERENCES

Adler, J. M., & McAdams, D. P. (2007a). The narrative reconstruction of psychotherapy. *Narrative Inquiry*, *17*(2), 179–202. https://doi.org/10.1075/ni.17.2.03adl

Adler, J. M., Skalina, L. M., & McAdams, D. P. (2008). The narrative reconstruction of psychotherapy and psychological health. *Psychotherapy Research*, *18*(6), 719–734. https://doi.org/10.1080/10503300802326020

Adler, J. M., Wagner, J. W., & McAdams, D. P. (2007b). Personality and the coherence of psychotherapy narratives. *Journal of Research in Personality*, *41*(6), 1179–1198. https://doi.org/10.1016/j.jrp.2007.02.006

Baillie, S. E., Sellwood, W., & Wisely, J. A. (2014). Post-traumatic growth in adults following a burn. *Burns*, *40*(6), 1089–1096. https://doi.org/10.1016/j.burns.2014.04.007

Beck, A., Ward, C., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, *4*(6), 561–571. https://doi.org/10.1001/archpsyc.1961.01710120031004

Bleidorn, W., Schwaba, T., Denissen, J. J., & Hopwood, C. J. (2019). Charting self-esteem during marital dissolution. *Journal of Personality*, *89*(1), 9–22. https://doi.org/10.1111/jopy.12525

Boals, A. (2023). Illusory posttraumatic growth is common, but genuine posttraumatic growth is rare: A critical review and suggestions for a path forward. *Clinical Psychology Review*, *103*, Article 102301. https://doi.org/10.1016/j.cpr.2023.102301

Buczyński, A., & Wawer, A. (2008). Automated classification of product review sentiments in Polish. *Intelligent Information Systems*, 213–217.

Chopik, W. J., Kelley, W. L., Vie, L. L., Oh, J., Bonett, D. G., Lucas, R. E., & Seligman, M. E. (2020). Development of character strengths across the deployment cycle among US Army soldiers. *Journal of Personality*, *89*(1), 23–34. https://doi.org/10.1111/jopy.12564

Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment*, *6*(4), 284–290. https://doi.org/10.1037/1040-3590.6.4.284

Czapiński, J. (1998). *The quality of life of Poles during the 1991–1997 social change* [Jakość życia Polaków w czasie zmiany społecznej 1991–1997]. Institute of Social Studies, Warsaw University.

Dabrowski, K. (1967). *Personality-shaping through positive disintegration.* Little Brown & Co.

Dąbrowski, K. (1972). *Psychoneurosis is not an illness: Neuroses and psychoneuroses from the perspective of positive disintegration.* GRYF Publications.

Dąbrowski, K. (1975). *Trud istnienia* [The hardship of existence]. Wiedza Powszechna.

Dąbrowski, K. (1979). Dezintegracja pozytywna [Positive disintegration]. Państwowy Instytut Wydawniczy.

Dąbrowski, K. (1996). *Multilevelness of emotional and instinctive functions.* Towarzystwo Naukowe KUL.

De Bondt, N., & Van Petegem, P. (2015). Psychometric evaluation of the overexcitability questionnaire-two applying Bayesian structural equation modelling (BSEM) and multiple-group BSEM-based alignment with approximate measurement invariance. *Frontiers in Psychology*, *6*, Article 1963. https://doi.org/10.3389/fpsyg.2015.01963

Dragan, M., Gulcz, M., & Wójtowicz, S. (2005). Adaptacja Post-traumatic Cognitions Inventory (PTCI): raport ze wstępnego badania walidacyjnego [The adaptation of the Post-traumatic Cognitions Inventory (PTCI): A report from an initial study]. *The Review of Psychology*, *48*, 417–430.

Dyer, C. (2006). *Research in psychology: A practical guide to methods and statistics.* Blackwell Publishing.

Edmonds, G. W., Jackson, J. J., Fayard, J. V., & Roberts, B. W. (2008). Is character fate, or is there hope to change my personality yet? *Social and Personality Psychology Compass*, *2*(1), 399–413. https://doi.org/10.1111/j.1751-9004.2007.00037.x

First, M. B., Gibbon, M., Spitzer, R. L., Williams, J. B. W., & Benjamin, L. S. (1997). *Structured Clinical Interview for DSM-IV Axis II Personality Disorders, (SCID-II).* American Psychiatric Press.

First, M. B., Spitzer, R. L, Gibbon M., & Williams, J. B. W. (2002). *Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition. (SCID-I/P).* Biometrics Research, New York State Psychiatric Institute.

Foa, E. B., Ehlers, A., Clark, D. M., Tolin, D. F., & Orsillo, S. M. (1999). The Post-Traumatic Cognition Inventory (PTCI): Development and validation. *Psychological Assessment*, *11*(3), 303–314. https://doi.org/10.1037/1040-3590.11.3.303

Foley Center for the Study of Lives. (1997). *Guided Autobiography.* https://www.sesp.northwestern.edu/docs/guided_autobiograph.pdf

Gangel, M. J., Kemmerly, R., Wilson, L., Glickson, S., Frazier, P. A., Tennen, H., & Jayawickreme, E. (2023). Does perceived posttraumatic growth predict observed changes in current-standing and state posttraumatic growth? *Clinical Psychological Science*. https://doi.org/10.1177/21677026231182329

Harper, A., Cornish, L., Smith, S., & Merrotsy, P. (2017). Through the Dąbrowski lens: A fresh examination of the Theory of Positive Disintegration. *Roeper Review*, *39*(1), 37–43. https://doi.org/10.1080/02783193.2016.1247395

Helgeson, V. S., Reynolds, K. A., & Tomich, P. L. (2006). A meta-analytic review of benefit finding and growth. *Journal of Consulting and Clinical Psychology*, *74*(5), 797–816. https://doi.org/10.1037/0022-006X.74.5.797

Hopson, B. & Adams, J. (1976). *Transition – Understanding and managing personal change*. Martin Robertson.

Jayawickreme, E., & Blackie, L. E. R. (2014). Post-traumatic growth as positive personality change: Evidence, controversies and future directions. *European Journal of Personality*, *28*(4), 312–331. https://doi.org/10.1002/per.1963

Jayawickreme, E., & Blackie, L. E. R. (2016). *Exploring the psychological benefits of hardship*. Springer.

Jayawikreme, E., Infurna, F. J., Alajak, K., Blackie, L. E. R., Chopik, W. J., Chung, J. M., Dorfman, A., Fleeson, W., Forgeard, M. J. C., Frazier, P., Furr, R. M., Grossmann, I., Heller, A. S., Laceulle, O. M., Lucas, R. E., Luhmann, M., Luong, G., Meijer, L., McLean, K. C., … Zonneveld, R. (2020). Post-traumatic growth as positive personality change: Challenges, opportunities, and recommendation. *Journal of Personality*, *89*(1), 145–165. https://doi.org/10.1111/jopy.12591

Jurafsky, D., & Martin, J. H. (2008). *Speech and language processing: An introduction to speech recognition, computational linguistics and natural language processing.* Prentice Hall.

Kaźmierczak, I., Sarzyńska-Wawer, J., Wawer, A., & Chądzyńska, M. (2022). Describing a critical life event and its psychological consequences: The type of language used by patients suffering from depression and its relationship with personality development. *Current Psychology*, *41*, 4368–4378. https://doi.org/10.1007/s12144-020-00944-5

Lanning, K., Pauletti, R. E., King, L. A., & McAdams, D. P. (2018). Personality development through natural language. *Nature Human Behaviour*, *2*(5), 327–334. https://doi.org/10.1038/s41562-018-0329-0

Levinson, D. J. (1986). A conception of adult development. *American Psychologist*, *41*(1), 3–13. https://doi.org/10.1037/0003-066X.41.1.3

Levinson, D. J. (1996). *The seasons of a woman's life.* Alfred Knopf.

Majkowicz, M., & Chojnacka-Szawłowska, G. (1994). Metodologiczne problemy badania jakości życia [Methodological problems in measuring the quality of life]. In K. de Walden-Gałuszko & M. Majkowicz (Eds.), *Jakość życia w chorobie nowotworowej* (pp. 65–81). Wydawnictwo Uniwersytetu Gdańskiego.

McAdams, D. P. (2001). The psychology of life stories. *Review of General Psychology*, *5*(20), 100–122. https://doi.org/10.1037/1089-2680.5.2.100

McAdams, D. P., Bauer, J. J., Sakaeda, A. R., Anyidoho, N. A., Machado, M. A., Magrino-Failla, K., White, K. W., & Pals, J. L. (2006). Continuity and change in the life story: A longitudinal study of autobiographical memories in emerging adulthood. *Journal of Personality*, *74*(5), 1371–1400. https://doi.org/10.1111/j.1467-6494.2006.00412.x

Mendaglio, S. (2008). Dabrowski's Theory of Positive Disintegration: A personality theory for the 21st century. In S. Mendaglio (Ed.), *Dabrowski's Theory of Positive Disintegration* (pp. 13–40). Great Potential Press.

Mikolov, T., Wen-Tau Yiy, & Zweig, G. (2013). *Linguistic regularities in continuous space word representations.* Microsoft Research Redmond, WA 98052. Linguistic Regularities in Continuous Space Word Representations (aclanthology.org).

Morgan, J. K., & Desmarais, S. L. (2017). Associations between time since event and posttraumatic growth among military veterans. *Military Psychology*, *29*(5), 456–463. https://doi.org/10.1037/mil0000170

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

Ogińska-Bulik, N., & Juczyński, Z. (2010). Posttraumatic growth – Characteristic and measurement. *Psychiatria*, *7*(4), 129–142. https://doi.org/10.5114/hpr.2014.43917

Ogrodniczuk, M., & Lenart, M. (2012). Web service integration platform for Polish linguistic resources. *Proceedings of the Eighth International Conference on Language Resources and Evaluation*, LREC'12, 1164–1168. http://www.lrec-conf.org/proceedings/lrec2012/pdf/648_Paper.pdf

Orwin, R. G. (1994). Evaluating coding decisions. In H. Cooper & L. V. Hedges (Eds.), *The Handbook of Research Synthesis* (pp. 150–151). Russell Sage Foundation.

Pennebaker, J. W. (1995). *Emotion, disclosure and health*. American Psychological Association.

Piechowski, M. M. (2008). Discovering Dabrowski's theory. In S. Mendaglio (Ed.), *Dabrowski's theory of positive disintegration* (pp. 41–77). Great Potential Press.

Rattray, J., & Jones, M. C. (2007). Essential elements of questionnaire design and development. *Journal of Clinical Nursing*, *16*(2), 234–243. https://doi.org/10.1111/j.1365-2702.2006.01573.x

Roberts, B. W., & Mroczek, D. (2008). Personality trait change in adulthood. *Current Directions in Psychological Science*, *17*(1), 31–35. https://doi.org/10.1111/j.1467-8721.2008.00543.x

Sarzyńska-Wawer, J., Pawlak, A., Szymanowska, J., Hanusz, K., & Wawer, A. (2023). Truth or lie: Exploring the language of deception. *PLoS One*, *18*(2), Article e0281179. https://doi.org/10.1371/journal.pone.0281179

Semin, G. R., & Fiedler, K. (1991). The linguistic category model, its bases, applications and range. *European Review of Social Psychology*, *2*(1), 1–30. https://doi.org/10.1080/14792779143000006

Sęk, H. (1991). Procesy twórczego zmagania się z krytycznymi wydarzeniami życiowymi a zdrowie psychiczne [The processes of creative struggle with critical life events and mental health]. In H. Sęk (Ed.), *Twórczość i kompetencje życiowe a zdrowie psychiczne* (pp. 30–41). UAM.

Shrout, P. E., & Fleiss, J. L. (1979). Intraclass correlations: Uses in assessing rater reliability. *Psychological Bulletin*, *86*(2), 420–428. https://doi.org/10.1037/0033-2909.86.2.420

Tedeschi, R. G., & Calhoun, L. G. (1996). The Posttraumatic Growth Inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress*, *9*(3), 455–471. https://doi.org/10.1007/BF02103658

Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic growth: conceptual foundations and empirical evidence. *Psychological Inquiry*, *15*(1), 1–18. https://doi.org/10.1207/s15327965pli1501_01

Waszczuk, J. (2012). Harnessing the CRF complexity with domain specific constraints. The case of morphosyntactic tagging of a highly inflected language. *Proceedings of the 24th International Conference on Computational Linguistics* (COLING2012), 2789–2804. https://aclanthology.org/C12-1170

Wawer, A., & Sarzyńska, J. (2018). The linguistic category model in Polish (LCM-PL). *Proceedings of the Eleventh International Conference on Language Resources and Evaluation* (LREC-2018). https://aclanthology.org/L18-1696

Woliński, M. (2014). Morfeusz reloaded. *Proceedings of the Ninth International Conference on Language Resources and Evaluation*, LREC (pp. 1106–1111). http://www.lrec-conf.org/proceedings/lrec2014/pdf/768_Paper.pdf

Wróblewska, A. (2014). *Polish dependency parser trained on an automatically induced dependency Bank* [Unpublished doctoral dissertation]. Institute of Computer Science, Polish Academy of Sciences, Warsaw.

Zigmond, A. S., & Snaith, R. P. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, *67*(6), 361–370. https://doi.org/10.1111/j.1600-0447.1983.tb09716.x