

ORIGINAL ARTICLE

Defeat, entrapment, and suicidal ideation: Twelve-month trajectories

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Abstract

Background: Defeat and entrapment have been highlighted in the development of suicidal ideation within the Integrated Motivational–Volitional model of suicidal behavior. Research suggests that entrapment has to be differentiated into internal and external entrapment. The aim of this study was to investigate the associations between defeat, internal, external entrapment, and suicidal ideation within and prospectively over measurements.

Methods: A sample of 308 psychiatric inpatients (53% female) aged 18 to 81 years ($M = 36.92$, $SD = 14.30$) was assessed for the four constructs after admission to a psychiatric ward and six, nine, and twelve months later. Multilevel analyses were conducted to examine associations.

Results: Defeat was associated with (a change in) internal and external entrapment. Defeat predicted a change in internal entrapment over time. Defeat and internal, but not external, entrapment were associated with (a change in) suicidal ideation. Internal entrapment was able to predict suicidal ideation. Internal entrapment and defeat predicted a change in suicidal ideation over time.

Conclusion: Results highlight the importance to distinguish between internal and external entrapment, and their specific association with suicidal ideation. Perceptions of internal entrapment are of central relevance when experiencing suicidal ideation and should be considered in clinical practice.

KEYWORDS

defeat, external entrapment, internal entrapment, suicidal ideation

INTRODUCTION

Defeat and entrapment have been proposed as two important clinical constructs with transdiagnostic relevance in the development of depression, anxiety, and post-traumatic stress disorders (Siddaway et al., 2015). Gilbert and Allan (1998)

describe defeat as feelings of powerlessness and humiliation, whereas entrapment is characterized by the felt incapability to escape from unbearable situations. They proposed that entrapment consists of two sub-types: internal and external entrapment, whereby external entrapment describes the feeling of being trapped by external circumstances and internal

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entrapment refers to being trapped by internal aspects such as one's own thoughts (Owen et al., 2018). This assumption is in line with findings of Forkmann et al. (2018) who demonstrated via network analyses the two-dimensional structure of entrapment highlighting the importance to distinguish between these two components.

Furthermore, in regard to the transdiagnostic relevance of defeat and entrapment, it has been empirically tested that defeat and entrapment are predictors for suicide attempts (O'Connor et al., 2013) and suicidal ideation (Rasmussen et al., 2010; Wetherall et al., 2018) emphasizing their central role in the development of suicidal ideation and behavior in general despite the differentiation between internal and external entrapment.

Recent suicide research focuses on distinguishing between predictors for suicidal ideation and those for actual suicidal behavior within so called ideation-to-action theories (Klonsky et al., 2018), such as the Integrated Motivational-Volitional model of suicidal behavior (IMV Model; O'Connor & Kirtley, 2018). The IMV model assumes that feelings of defeat and entrapment are of central relevance in the development of suicidal ideation. The IMV model is a relatively new theoretical framework, which consists of three different phases. The pre-motivational phase, including the biopsychosocial context, individual vulnerability, and negative life events, is based on diathesis-stress models of suicide (Mann et al., 1999). The second phase is the motivational phase, explaining the development of suicidal ideation by including the constructs defeat and entrapment. However, the IMV model does not distinguish between internal and external entrapment (O'Connor & Kirtley, 2018). The last phase of the IMV model is the volitional phase, in which the actual suicidal behavior occurs.

The IMV model proposes that feelings of defeat lead to feelings of entrapment and, consequently, to the development of suicidal ideation. However, first longitudinal studies provide heterogeneous results. Taylor et al. (2011) could show that participants experiencing high levels of defeat experienced more suicidal ideation over a 12-month period of time. In another study, reduction of suicidal ideation over a 7 week period of time was associated with reduced feelings of entrapment but not defeat (Ng et al., 2016). For both defeat and entrapment, Slade et al. (2014) could show that defeat and entrapment were able to predict self-harm at a four-month follow-up. Branley-Bell et al. (2019) even reported that defeat and entrapment both served as direct predictors for suicidal ideation cross-sectionally, whereas prospectively, defeat had an indirect effect on suicidal ideation through entrapment, emphasizing the postulated pathway of the IMV model.

However, most studies so far did not differentiate between internal and external entrapment due to their close relationship (Taylor, Gooding, Wood, Johnson, et al., 2011) and the postulated pathway of the IMV model also does not distinguish

between internal and external entrapment. In line with the assumptions of the first part of the central pathway of the IMV model that entrapment is associated with feelings of defeat, Carvalho et al. (2013) found that both internal and external entrapment are associated with feelings of defeat, which is also in line with findings of Gilbert and Allan (1998). When examining the second part of the central pathway in the IMV model that assumes that entrapment and defeat lead to suicidal ideation, Lucht et al. (2020) could demonstrate a simple mediation of defeat via both internal and external entrapment on suicidal ideation cross-sectionally in a sample of psychiatric inpatients; however, the effect size was greater for internal entrapment than for external entrapment.

Moreover, Owen et al. (2018) even found only internal but not external entrapment to be a mediator of the relationship between defeat and suicidal ideation. Rasmussen et al. (2010) also emphasize that internal entrapment seems to be more important in regard to suicidal ideation than external entrapment because external entrapment can easier be modified than internal entrapment. They argue that feeling trapped in one's own thoughts and feelings (internal entrapment) while experiencing only few positive future expectations has a more negative influence on suicidal ideation than experiencing entrapment through external circumstances.

As can be seen, results of recent research are heterogeneous with more evidence for an association of internal entrapment than external entrapment with suicidal ideation and a general lack of studies investigating the differential relationship of internal and external entrapment with suicidal ideation. Unfortunately, there is a huge lack of prospective data in this area. Only Owen et al. (2018) provided prospective data with the distinction between internal and external entrapment so far. In the light of recent meta-analytic evidence that, even after decades of research, the prediction of suicidal ideation, attempts, and deaths is still insufficient (Franklin et al., 2017), more prospective data are needed that have the potential to shed light on potential causal pathways leading to suicidal ideation and behavior. Thus, further evidence on the causal relationship between defeat, (internal and external) entrapment, and suicidal ideation as proposed by the IMV model based on an appropriate prospective design is desperately needed, which this study will provide. Also, most studies investigated general populations or student samples, but studies with psychiatric inpatients admitted due to a suicidal attempt or severe suicidal ideation are lacking. Thus, this study aimed to fill these two important gaps by not only providing prospective data but also investigating a sample with individuals being at high risk for suicide. The goal was to empirically investigate whether defeat, internal, and external entrapment and suicidal ideation are associated and whether the postulated pathway in the IMV model from defeat to entrapment to suicidal ideation can be prospectively confirmed. In this study, we hypothesize that (1) defeat is associated with internal and external entrapment within measurements in

line with findings of Carvalho et al. (2013) and that (2) defeat can predict internal and external entrapment prospectively from measurement to measurement. Regarding suicidal ideation and in line with findings of Owen et al. (2018) and Rasmussen et al. (2010), we hypothesize that (3) defeat and internal, but not external, entrapment are associated with suicidal ideation within measurements and that (4) defeat and internal, but not external, entrapment can predict suicidal ideation over time.

METHOD

Sample

This study is a secondary analysis of the data of a prospective multicenter study named “Predictors of suicidal ideation and suicidal behavior in a high-risk sample (PRESS)”. Further information can be found elsewhere (Forkmann et al., 2020a, 2020b; Lucht et al., 2020). The total sample comprised 308 participants aged 18–81 years ($M = 36.92$, $SD = 14.30$), 54% of participants were female ($n = 165$). One-hundred and sixty-three participants (53%) were admitted to a psychiatric ward due to recent suicide attempt and 145 (47%) due to an acute suicidal crisis (i.e., suicidal intent with intrusive suicidal ideation and an acute suicide threat). The most common disorders according to the International Classification of Diseases (ICD-10; Dilling et al., 1991) were affective disorders (F3; $n = 235$; 77%), neurotic, stress-related, and somatoform disorders (F4; $n = 110$; 36%), and personality disorders (F6; $n = 76$; 25%). Three hundred and two participants aged between 18 and 81 ($M = 36.83$, $SD = 14.25$), and 53.3% female ($n = 161$) provided sufficient data that have been integrated to the multilevel analyses.

Procedure

Participants were recruited in 13 different psychiatric wards in three German cities (Aachen, Bochum, and Leipzig) between September 2016 and March 2018. Participants were eligible if they had been admitted to the psychiatric ward after a suicide attempt or for treatment because of an acute suicidal crisis. Participants were approached and interviewed within 14 days after their admission to the psychiatric ward for the baseline assessments (T0). Exclusion criteria were acute intoxication or psychotic symptoms, age below 18 years, insufficient knowledge of the German language, and cognitive impairments. Participants were informed about the voluntary nature of the study and data storage. They gave written informed consent before participating. The study was approved by the responsible Ethics Committees (Medical Faculty, RWTH Aachen University: EK310/13; Medical Faculty, Ruhr-University Bochum: 4909-14;

Medical Faculty, University of Leipzig: 042-14-27012014) and is in accordance with the Declaration of Helsinki (World Medical Association, 2001). Participants received 20€ per completed assessment (80€ for the completion of all four assessments). They underwent a baseline assessment within two weeks after admission including a structured clinical interview MINI-DIPS (Margraf, 2013) to diagnose the current mental illness and several questionnaires including different theoretical constructs that are potentially relevant to predict suicidal ideation and behavior (baseline assessment T0). Participants were contacted for follow-up assessments after six (T1), nine (T2), and 12 months (T3) via phone, mail, and email in order to examine suicidal ideation and underlying constructs longitudinally. Interviews and questionnaires of T1, T2, and T3 were conducted after discharge. In some cases, patients were readmitted to the psychiatric ward due to suicidal plans. T0 and T3 interviews were conducted in the respective hospital. T1 and T2 interviews were conducted via phone. Questionnaires were sent by mail. In case of acute suicidal intent during a phone interview, interviewers were instructed to interrupt the interview, check for severity, and take further steps; for instance, ask the participant where he/she was and call an ambulance or, in case the participant was in hospital at the time of assessment, call the responsible doctor or ward. If the participant was not at imminent risk of attempting suicide, the participant was encouraged to make an appointment with his/her psychotherapist/psychiatrist and a new interview appointment was arranged. We conducted ANOVAS to examine differences between participants who completed everything (Group 8), participants who only completed T0, T2, T3 (Group 7), participants who only completed T0, T1, T3 (Group 6), participants who only completed T0, T1, T2 (Group 5), participants who only completed T0 and T3 (Group 4), participants who only completed T0 and T2 (Group 3), participants who only completed T0 and T1 (Group 2), and participants who did not complete any follow-up assessments but only T0 (Group 1).

There was no significant difference for the groups in their score of suicidal ideation ($F(7) = 1.22$, $p = 0.293$) at T0. All groups also did not differ in their age ($F(7) = 1.95$, $p = 0.062$). Fisher's exact test for cell frequencies <5 was significant ($p = 0.007$) for gender differences. Further tests showed that only participants in group 6 (T0, T1, T3) differed in regard to gender from the other groups. More men than women only filled out T0, T1, T3. For the other groups, there were no gender differences in completing or not completing follow-up assessments.

Measurements

In the following, only measures relevant for the hypotheses are listed.

Beck scale for suicide ideation

The Beck Scale for Suicide Ideation (BSS; Beck et al., 1979; Beck et al., 1988; German version: Kliem & Brähler, 2016; Spangenberg et al., 2020) is a self-report questionnaire assessing suicidal ideation. It consists of 21 statement groups, each consisting of three response options with increasing severity (ranging from 0 to 2) and referring to the last seven days (e.g., “I have no wish to die/a weak wish to die/a moderate to strong wish to die”). The sum score of the BSS (item 1 to 19) ranges from 0 to 38 with higher values indicating higher suicide risk. Studies on the factorial structure of the BSS revealed inconsistent results (Beck et al., 1979; Ozcelik et al., 2015; Spangenberg et al., 2020). However, the use of the total score is common practice (Forkmann et al., 2016). The internal consistency for the total score in our sample was high for the total score (Cronbach's $\alpha = 0.87$) and comparable with the psychometric properties (Cronbach's $\alpha = 0.88$) reported by Kliem and Brähler (2015).

Defeat scale

The Defeat Scale (DS; Gilbert & Allan, 1998; German version: Forkmann et al., 2017) is a self-report measure to assess defeat as a unidimensional construct. The DS comprises 16 items (e.g., “I feel defeated by life.”) referring to the last seven days, which are to be answered on a five-point Likert scale from 0 (never) to 4 (always). A sum score was used with higher values indicating higher feelings of defeat. For the original scale as well as its German version, high internal consistencies (Cronbach's $\alpha > 0.93$) were found (Forkmann et al., 2017; Gilbert & Allan, 1998), which are comparable with our data (Cronbach's $\alpha = 0.95$).

Entrapment scale

The Entrapment Scale (ES; Gilbert & Allan, 1998; German version: Trachsel et al., 2010) consists of 16 items (e.g., “I would like to escape my own thoughts and feelings.”) referring to the perception of being trapped in highly stressful internal circumstances without the perceived possibility to escape. The ES is a self-report measure, which is rated on a five-point Likert scale from 0 (not at all) to 4 (very much) regarding the last week. High internal consistencies were found for both clinical and subclinical samples (Cronbach's $\alpha > 0.86$; Gilbert & Allan, 1998; Trachsel et al., 2010). In the present study, the sum scores of each of the two subscales internal (6 items) and external (10 items) entrapment were used. In our sample, the internal consistencies were high for internal (Cronbach's $\alpha = 0.87$) and for external (Cronbach's $\alpha = 0.84$) entrapment.

Statistical analyses

Due to the nested structure of the data (assessments nested in persons), multilevel analyses were conducted using the statistical software HLM (Raudenbusch et al., 2010) and R (R Core Team, 2015). The dataset consisted of 4 (assessments on level 1) * 302 (persons on level 2) = 1208 observations. Participants completed on average 66.23% of the assessments. Missing data on level 1 were handled with pairwise deletion for each correlation pair and for each observation per person. Through this pairwise deletion, it is possible to include this person for all further observations and for all further correlation pairs.

The power analyses were conducted a priori for the primary analyses of the PRESS project. In Forkmann et al. (2020b), this was described further. For those analyses, the sample was sufficiently powered ($\alpha = 0.05$, $\beta = 0.95$ and $f = 0.15$, $n = 195$). For the analyses reported in this manuscript, the sample was underpowered (Kleiman), which increases the risk for a beta error.

Intercept-only models and intraclass correlations (ICC) to indicate the proportion of variance explained by the two different levels for suicidal ideation, defeat, and internal and external entrapment were calculated (Hox, 2010) to examine fluctuations. Additionally, mean squared successive differences (MSSD) were calculated. The MSSD is the sum score of the squared differences between two measurements in time series and is, therefore, used as a measure for point-to-point variability. Higher values represent higher fluctuation (Woynshville et al., 1999). Quasi R^2 (Raudenbush & Bryk, 2002) was calculated to see changes of the outcome's residual variance when adding an additional level 1 predictor to the model (Hox, 2010).

Following suggestions by Kleiman and Nock (2018) and Kleiman et al. (2017), for the following analyses, we differentiated between different types of association between risk factors and outcome depending on the temporal structure of the association examined: (1) Risk factors were considered “associates,” if they were related to the outcome variable measured at the same assessment (t); (2) risk factors were considered “associates of change,” if they were related to the outcome variable measured at the same assessment (t) while additionally controlling for autocorrelative effects of the outcome variable (at $t-1$); this analysis reveals how risk factors at t are related to a change in the outcome from $t-1$ to t . (3) Risk factors were considered “predictors,” if their measurements at $t-1$ were related to the outcome variable measured at t ; (4) risk factors were considered “predictors of change,” if their measurements at $t-1$ were related to the outcome variable measured at t , while additionally controlling for autocorrelative effects of the outcome variable (at $t-1$); this analysis reveals how risk factors at $t-1$ are related to a change in the outcome from $t-1$ to t .

To examine whether there is an association between defeat and internal entrapment and whether defeat can predict internal entrapment over time, four models were computed. For the examination of the first part of the first hypothesis of defeat being an associate of internal entrapment within measurements, model 1a included one cross-sectional predictor at level 1 (defeat at t). To find out whether defeat is associated with a change in internal entrapment, model 1b also included defeat at t but this time as an associate of change by adding internal entrapment as a time-lagged predictor (at $t-1$) to account for autocorrelative effects of internal entrapment (internal entrapment predicting itself over time, from $t-1$ to t etc.).

To test whether defeat predicts internal entrapment over time from measurement to measurement (second hypothesis), two models were calculated. Model 1c included defeat as a time-lagged predictor (defeat at $t-1$). To find out whether defeat can predict a change in internal entrapment, model 1d also included defeat at $t-1$ but this time as a predictor of change by adding internal entrapment as a time-lagged predictor (at $t-1$).

For external entrapment, model 2a and 2b were identical to model 1a and 1b, and model 2c and 2d were identical to model 1c and 1d (except with external entrapment instead of internal entrapment as outcome variable).

To examine the influence of defeat and entrapment on suicidal ideation, the third hypothesis of defeat and internal, but not external, entrapment being associated with suicidal ideation was tested with two models. Model 3a included defeat and internal as well as external entrapment as associates (at t) at level 1. In model 3b, the model further included time-lagged suicidal ideation (at $t-1$) to account for autocorrelation of suicidal ideation in the model and to see whether defeat, internal, and external entrapment are associates of change for suicidal ideation. For the fourth hypothesis of defeat and internal, but not external entrapment predicting suicidal ideation over time from measurement to measurement, two models were tested. Model 3c was calculated with defeat and internal and external entrapment as time-lagged predictors (all at $t-1$) predicting suicidal ideation (at t). Model 3d further included time-lagged suicidal ideation (at $t-1$) to account for autocorrelation of suicidal ideation and to see whether defeat, internal, and external entrapment are predictors of change for suicidal ideation prospectively. Random slopes should be allowed when applicable; therefore, deviance tests for both random intercept and random slopes models were conducted to reveal whether the random slopes models fit better than the more restrictive random intercept models. If the deviance test was not significant, only results of the random intercept model (fixed effects) would be reported (Snijders, 2011). For suicidal ideation as an outcome variable, data did not provide the possibility to

estimate random slope models because the number of observations was not sufficient for allowing random slopes; therefore, only random intercept models (fixed effects) will be reported for the hypotheses including suicidal ideation.

All models were estimated by means of restricted maximum likelihood estimation (REML) since the number of level 2 units is small (Hayes, 2006). Defeat and internal and external entrapment as level 1 predictor (of change) variables were person-mean centered because within-person relationships were of interest (Enders & Tofighi, 2007). In models 1b, 1d, 2b, 2d, 3b, and 3d, the predictors (of change) were time lagged to the previous assessment ($t-1$). The last value per day was not lagged to evade between-days lags.

RESULTS

Descriptive information for all predictors and suicidal ideation for each assessment can be found in Table 1.

Variability over time

Across all four assessments, 87.7% of all participants reported suicidal ideation. For suicidal ideation around 40% and for defeat around 50% of the variance was accounted for by within-person variability over time (see Table 1). For internal and external entrapment, around 65% of the variance was due to within-person variability.

Multilevel analyses

Results of model 1a showed that defeat was significantly associated with internal entrapment within measurements. Since the deviance test was significant, the random slopes model fitted the data better, meaning that the individual slopes for the association between defeat and internal entrapment varied significantly between participants (see fixed and random effects in Table 2). This association was rather negative (see ratio of slopes >0 in Table 2). Model 1b showed that defeat was significantly associated with a change in internal entrapment since the last measurement ($t-1$). Since the deviance test was significant, the random slopes model fitted the data better, meaning that the individual slopes for the association between defeat and internal entrapment varied significantly between participants (see fixed and random effects in Table 2). This association was positive for almost all participants (see ratio of slopes >0 in Table 2).

In regard to predicting internal entrapment by defeat over time from measurement to measurement, model 1c showed that defeat at $t-1$ was not able to predict internal entrapment

TABLE 1 Descriptive statistics for each assessment and variability indices of the constructs over all assessments

Constructs	N	M	SD	Min.	Max.	MSSD				ICC
						M_{MSSD}	SD_{MSSD}	Min_{MSSD}	Max_{MSSD}	
Suicidal ideation T0	298	14.71	9.55	0.00	35.00	271.03	2725.23	0.00	37274.45	0.60
Suicidal ideation T1	175	10.25	9.60	0.00	36.00					
Suicidal ideation T2	169	9.03	9.48	0.00	34.00					
Suicidal ideation T3	157	8.64	9.52	0.00	32.00					
Defeat T0	297	43.05	13.71	3.00	64.00	208.07	330.75	1.00	2704.00	0.53
Defeat T1	176	32.35	16.50	0.00	64.00					
Defeat T2	171	31.32	17.14	1.00	64.00					
Defeat T3	156	30.48	17.42	2.00	64.00					
Internal entrapment T0	298	18.47	5.79	0.00	24.00	77.74	94.31	0.00	508.50	0.35
Internal entrapment T1	175	12.01	8.25	0.00	24.00					
Internal entrapment T2	170	11.61	8.23	0.00	24.00					
Internal entrapment T3	156	11.16	8.44	0.00	24.00					
External entrapment T0	299	25.10	8.45	0.00	40.00	131.49	143.72	1.00	772.00	0.36
External entrapment T1	175	17.33	10.71	0.00	39.00					
External entrapment T2	170	16.10	10.94	0.00	40.00					
External entrapment T3	156	15.98	11.22	0.00	40.00					

Note: Defeat was measured with 16 items resulting in a sum score from 0 to 64; Internal Entrapment was measured with six items resulting in a sum score from 0 to 24, external Entrapment was measured with ten items resulting in a sum score from 0 to 40, and suicidal ideation was measured with 21 items resulting in a sum score from 0 to 38.

Abbreviations: *M*, mean; *SD*, standard deviation; *Min.*, minimum; *Max.*, maximum; *MSSD*, mean squared successive difference; *ICC*, intraclasscorrelation.

at *t*. However, defeat at *t-1* could predict a change in internal entrapment at *t* (model 1d).

Model 2a revealed that defeat was also significantly associated with external entrapment within measurements. However, individual slopes for this association did not significantly vary between participants; therefore, only fixed effects are reported in Table 3. Model 2b showed that defeat was significantly associated with a change in external entrapment since the last measurement (*t-1*) (fixed effects; Table 3).

In regard to predicting external entrapment by defeat over time from measurement to measurement, model 2c showed that defeat at *t-1* was not able to predict internal entrapment at *t* and defeat at *t-1* could not predict a change in external entrapment from *t-1* to *t* (model 2d).

Model 3a revealed that defeat and internal entrapment were significantly associated with suicidal ideation over all participants within measurements and both were associated with a change in suicidal ideation (see fixed effects in Table 4). However, as model 3b shows, external entrapment was not

significantly associated with suicidal ideation (*t*) or a change in suicidal ideation since the last assessment (*t-1*).

Model 3c showed for the prediction of suicidal ideation over time from measurement to measurement by defeat, internal, and external entrapment that only internal, but not defeat and external, entrapment at *t-1* could predict suicidal ideation at *t* (see fixed effects in Table 4). Model 3d revealed that internal entrapment and defeat, but not external entrapment, could predict a change in suicidal ideation from *t-1* to *t*.

DISCUSSION

The aim of the current study was to empirically investigate the central pathway of the motivational phase of the IMV model within a prospective study. We hypothesized that (1) defeat is associated with internal and external entrapment and that (2) defeat can predict internal and external entrapment prospectively. Furthermore, we hypothesized that (3) defeat

TABLE 2 Parameter estimates for multilevel models with internal entrapment as outcome variable

Model	Fixed effects					Random effects			Variance-covariance component test	
	Est.	95% CI (Est.)	SE	<i>t</i> (df)	<i>p</i>	χ^2 (df)	<i>p</i>	Slopes >0 ^a	χ^2 (df)	<i>p</i>
Model 1a: Slope										
Intercept	15.16	3.60–26.71	0.37	40.76 (297)	<0.001	2092.56 (208)	<0.001		17.78 (2)	0.001 ^{***}
Defeat	0.45	0.22–0.68	0.02	25.42 (297)	<0.001 ^{***}	294.50 (207)	<0.001 ^{***}	0.01%		
Quasi R ² : Predictor of model 2 accounts for 69.81% of residual variance in internal entrapment at level 1 ^b										
Model 1b: Slope										
Intercept	11.62	–2.69–25.93	0.55	21.13 (187)	<0.001	2336.200 (115)	<0.001		17.25 (5)	0.004 [*]
Defeat	0.48	0.05–0.92	0.03	14.48 (187)	<0.001 ^{***}	159.078 (115)	0.004 [*]	98.47%		
Internal entrapment (<i>t</i> –1)	–0.06	–0.38–0.27	0.03	–1.83 (187)	0.069	125.945 (115)	0.228			
Quasi R ² : Predictor of model 2 accounts for 83.87% of residual variance in internal entrapment at level 1 ^b										
Model 1c: Intercept										
Intercept	11.57		0.55	21.1 (185)	<0.001					
Defeat (<i>t</i> –1)	–0.01		0.03	–0.48 (263)	0.629					
Quasi R ² : Predictor of model 2 accounts for 46.96% of residual variance in internal entrapment at level 1 ^b										
Model 1d: Intercept										
Intercept	11.59		0.55	21.18 (187)	<0.001					
Defeat (<i>t</i> –1)	0.16		0.05	3.46 (262)	<0.001 ^{***}					
Internal entrapment (<i>t</i> –1)	–0.31		0.08	–4.15 (262)	<0.001 ^{***}					
Quasi R ² : Predictors of model 2 accounts for 49.30% of residual variance in internal entrapment at level 1 ^b										

Note: *N* (Level 2) = 302. *N* (Level 1) = 800. All level 1 predictors were person-mean centered.

Abbreviations: Est, Estimate (unstandardized regression coefficient; 95% CI (Est.), 95% confidence interval for Est; SE, standard error.

^aThis value indicates the percentage of slope coefficients that are positive based on the assumption of normally distributed slope coefficients.

^bQuasi R² indicates the change of the residual variance in internal entrapment when adding the models' level 1 predictors compared to the baseline models.

p* < 0.05.; **p* < 0.001

and internal, but not external, entrapment are associated with suicidal ideation within measurements and that (4) defeat and internal, but not external, entrapment can predict suicidal ideation over time from measurement to measurement.

Defeat and entrapment

In line with the first hypothesis, results indicated that defeat was associated with internal entrapment at the same measurement (*t*) and with a change in internal entrapment since the last measurement (*t*–1). The slopes for this association varied between participants, meaning that an increase of internal entrapment relative to the increase of defeat seems to be individually different within measurements. Additionally, defeat was also associated with external entrapment at the same measurement (*t*) and with a change in external entrapment since the last assessment (*t*–1).

The second hypothesis could only be partly confirmed. Defeat (*t*–1) could not predict internal entrapment to the next measurement (*t*) but could predict a change in internal entrapment over time. Defeat was neither able to predict external entrapment nor a change in external entrapment over time from measurement to measurement. The association within measurements between (internal and external) entrapment and defeat is in line with assumptions of the IMV model (O'Connor & Kirtley, 2018) and prior empirical research (Carvalho et al., 2013; Gilbert & Allan, 1998). However, the IMV model states that feelings of defeat lead to entrapment in the motivational phase, suggesting a prospective pathway (i.e., defeat at *t*–1 predicting entrapment at *t*). This pathway could only be partly confirmed for internal but not for external entrapment. So far, the IMV model does not distinguish between internal and external entrapment, even though the results of this study together with prior empirical findings (Forkmann et al., 2018) suggest to do so.

TABLE 3 Parameter estimates for multilevel models with external entrapment as outcome variable

Model	Fixed effects			
	Est.	SE	<i>t</i> (df)	<i>p</i>
Model 2a:				
Intercept	20.65	0.50	41.16 (297)	<0.001
Defeat	0.57	0.02	24.72 (492)	<0.001***
Quasi R ² : Predictor of model 2 accounts for 54.51% of residual variance in external entrapment at level 1 ^b				
Model 2b: Intercept				
Intercept	16.56	0.73	22.85 (188)	<0.001
Defeat	0.51	0.04	13.43 (262)	<0.001***
External entrapment (<i>t</i> -1)	-0.02	0.03	-0.59 (262)	0.555
Quasi R ² : Predictor of model 2 accounts for 70.38% of residual variance in external entrapment at level 1 ^b				
Model 2c:				
Intercept	16.42	0.73	22.49 (185)	<0.001
Defeat (<i>t</i> -1)	0.02	0.03	0.65 (263)	.520
Quasi R ² : Predictor of model 2 accounts for 50.02% of residual variance in external entrapment at level 1 ^b				
Model 2d: Intercept				
Intercept	16.50	0.73	22.71 (187)	<0.001
Defeat (<i>t</i> -1)	0.08	0.05	1.60 (262)	0.112
External entrapment (<i>t</i> -1)	-0.07	0.06	-1.09 (262)	0.278
Quasi R ² : Predictors of model 2 accounts for 50.52% of residual variance in external entrapment at level 1 ^b				

Note: *N* (Level 2) = 302. *N* (Level 1) = 800. All level 1 predictors were person-mean centered.

Abbreviations: Est, Estimate (unstandardized regression coefficient; 95% CI (Est.), 95% confidence interval for Est; SE, standard error.

^aThis value indicates the percentage of slope coefficients that are positive based on the assumption of normally distributed slope coefficients.

^bQuasi R² indicates the change of the residual variance in external entrapment when adding the models' level 1 predictors compared to the baseline models.

****p* < 0.001.

Prediction of suicidal ideation

In line with our third hypothesis, defeat and internal entrapment were associated with suicidal ideation and were also associated with a change in suicidal ideation since the last measurement (*t*-1). External entrapment was neither associated with suicidal ideation nor a change in suicidal ideation highlighting again the importance of distinguishing between internal and external entrapment. For the fourth hypothesis, that defeat and internal, but not external, entrapment were able to predict suicidal ideation over time, results were mixed.

Internal entrapment but not defeat (and external entrapment) could predict suicidal ideation over time. Internal entrapment and defeat, but not external entrapment, could predict a change in suicidal ideation over time. Interestingly, the association at the same measurement between internal entrapment and suicidal ideation was positive. Thus, over short periods of time (such as days or hours as the questionnaires asked for feelings of defeat or entrapment and suicidal ideation within the past days), high levels of internal entrapment coincided with high levels of suicidal ideation, which is in line with the assumptions of the IMV model. However, in this sample, suicidal ideation and all other assessed constructs decreased over time. In other words, participants felt increasingly better on all variables over the course of the study, showing the highest scores on the baseline assessment and the lowest scores on the final assessment. In our prospective analyses, this has the effect that suicidal ideation itself was negatively associated with suicidal ideation over time, meaning that high scores in suicidal ideation at time *t*-1 predicted lower scores in suicidal ideation at time *t*. The same applied to internal entrapment. Thus, although negatively related across time, internal entrapment simultaneously processed with suicidal ideation. As suicidal ideation decreased, internal entrapment decreased, too.

It has to be noted that for external entrapment, there was neither a significant association with suicidal ideation at the same measurement nor prospectively. Thus, the association between suicidal ideation and internal entrapment seems to be closer than the association between suicidal ideation and external entrapment and appears to be most relevant for short time intervals. Due to the general negative trend in our data, the long-term prediction of suicidal ideation should be interpreted with caution. Therefore, future research is needed in samples at high suicide risk with shorter intervals between measurements for a better understanding of the direction of the association between suicidal ideation and internal entrapment.

These results generally corroborate findings of Rasmussen et al. (2010) and Owen et al. (2018) who found that the pathway from defeat to suicidal ideation was only mediated by internal entrapment but not by external entrapment. In the light of these results, it should be considered to include the differentiation between internal and external entrapment in current theories on the development of suicidal ideation, such as the IMV model.

Concerning this differentiation, Taylor et al. (2011) accentuate the diversity in the experienced feelings of internal and external entrapment. Since internal entrapment is attributable to internal circumstances (e.g., unwanted thoughts and rumination (Gilbert & Allan, 1998)) and external entrapment is caused by external circumstances (e.g., job difficulties; Taylor, Gooding, Wood, & Tarrier, 2011)), it appears that the escape from external entrapment is more modifiable by

TABLE 4 Parameter estimates for multilevel models with suicidal ideation as outcome variable

Model	Fixed effects			
	Est.	SE	<i>t</i> (df)	<i>p</i>
Model 3a:				
Intercept	12.20	0.52	23.70 (297)	<0.001
Defeat	0.27	0.03	8.27 (486)	0.001 ^{***}
Internal entrapment	0.06	0.06	0.94 (486)	0.003 ^{**}
External entrapment	0.13	0.04	3.03 (486)	0.348
Quasi R ² : Predictors of model 2 accounts for 46.39% of residual variance in suicidal ideation at level 1 ^b				
Model 3b: Intercept				
Intercept	9.67	0.67	14.42 (187)	<0.001
Suicidal ideation (<i>t</i> -1)	-0.09	0.04	-2.56 (259)	0.011 ^{**}
Defeat	0.17	0.05	3.63 (259)	<0.001 ^{***}
Internal entrapment	0.24	0.08	3.22 (259)	0.001 ^{***}
External entrapment	0.05	0.05	0.95 (259)	0.341
Quasi R ² : Predictors of model 2 accounts for 67.29% of residual variance in suicidal ideation at level 1 ^b				
Model 3c:				
Intercept	9.52	0.67	14.18 (185)	<0.001
Defeat (<i>t</i> -1)	0.07	0.04	1.69 (260)	0.092
Internal entrapment (<i>t</i> -1)	-0.21	0.09	-2.52 (260)	0.013 [*]
External entrapment (<i>t</i> -1)	0.08	0.05	1.54 (260)	0.124
Quasi R ² : Predictors of model 2 accounts for 53.08% of residual variance in suicidal ideation at level 1 ^b				
Model 3d: Intercept				
Intercept	9.58	0.667	14.37 (186)	<0.001
Suicidal ideation (<i>t</i> -1)	-0.18	0.056	-3.22 (260)	0.001 ^{***}
Defeat (<i>t</i> -1)	0.13	0.044	2.84 (260)	0.005 ^{**}
Internal entrapment (<i>t</i> -1)	-0.20	0.084	-2.39 (260)	0.018 [*]
External entrapment (<i>t</i> -1)	0.10	0.052	1.96 (260)	0.051
Quasi R ² : Predictors of model 2 accounts for 54.25% of residual variance in suicidal ideation at level 1 ^b				

Note: *N* (Level 2) = 302. *N* (Level 1) = 800. All level 1 predictors were person-mean centered.

Abbreviations: Est, Estimate (unstandardized regression coefficient; 95% CI (Est.), 95% confidence interval for Est; SE, standard error.

^aThis value indicates the percentage of slope coefficients that are positive based on the assumption of normally distributed slope coefficients.

^bQuasi R² indicates the change of the residual variance in suicidal ideation when adding the models' level 1 predictors compared to the baseline models.

p* < 0.05; *p* < 0.01; ****p* < 0.001

an individual (Rasmussen et al., 2010), even though the individual must take concrete actions. Escaping from internal entrapment, on the other hand, probably needs more psychotherapeutic support as it includes ruminative processes (Gilbert & Allan, 1998).

Rumination itself has also been shown to be significantly associated with suicidal ideation (Morrison & O'Connor, 2008), and this association is mediated via feelings of entrapment (Teismann & Forkmann, 2017). In the IMV model

(O'Connor & Kirtley, 2018), rumination serves as a so called "threat to self-moderator (TSM)" and, therefore, moderates the transition from defeat to entrapment. As stated above, the emergence of internal entrapment is expected to occur through rumination (Gilbert & Allan, 1998), whereas the emergence of external entrapment is expected to occur through external circumstances (Taylor, Gooding, Wood, & Tarrier, 2011). This could suggest that rumination is not associated with total entrapment but mainly with internal and

not external entrapment; therefore, it could be possible that rumination only actually moderates the transition from defeat to internal but not external entrapment. For future studies, this emphasizes the need to examine the other moderators proposed in the IMV model.

Following this line of argumentation, other proposed TSM (O'Connor and Kirtley, 2018) such as coping, which has been shown to incorporate cognitive processes (e.g., Cheng & Cheung, 2005) and memory biases, which essentially is a cognitive process (e.g., Marchetti et al., 2018) might also be more relevant for the transition from defeat to internal rather than external entrapment. The TSM social problem-solving can include impersonal, personal or intrapersonal, interpersonal, and broader community and societal problems (D'zurilla et al., 2004) and can, therefore, not solely be reduced to cognitive processes since it also includes behavioral processes. It could be possible that this moderator is relevant for the transition from defeat to both internal and external entrapment depending on the actual problem that has to be solved.

The development from entrapment to suicidal ideation in the IMV model (O'Connor & Kirtley, 2018) is moderated by "motivational moderators (MM)." One might speculate that moderators such as thwarted belongingness, perceived burdensomeness, and social support could rather emerge through external than internal circumstances since they are strongly connected to the social surrounding (Joiner, 2007). However, perceived burdensomeness for example probably depends at least to some extent on the subjective cognitive representation of interpersonal relations ("perceived" burdensomeness) and could just as well be related to internal entrapment. Therefore, future research is needed to find out more about which of the moderators affect either internal and/or external entrapment to further specify these pathways in the IMV model.

Clinical implications and future studies

Internal entrapment and defeat seem to be strongly related to suicidal ideation. Thus, these constructs should be considered in clinical risk assessments as factors that potentially heighten the risk for suicidal ideation. As internal entrapment appears to have an even stronger relation to suicidal ideation than external entrapment, targeting internal entrapment in psychotherapeutic interventions addressing suicidal ideation and behavior should be taken into consideration. However, it is unclear whether therapeutically initiated reductions in internal entrapment entail reductions in suicidal ideation or even intent. According to meta-analytic evidence, cognitive-behavioral therapy and dialectical behavior therapy (DBT) reduce the risk of suicide (re)attempts (Hawton et al., 2016). Future studies could aim at investigating whether these interventions may help in reducing internal entrapment and whether this reduction

mediates the effect on suicidal ideation and behavior. Moreover, evidence accumulates that targeted short intervention programs for patients after a suicide attempt such as the Attempted Suicide Short Intervention Program (ASSIP; Gysin-Maillart et al., 2016) or Safety Planning (Stanley & Brown, 2012; Stanley et al., 2018) may reduce the risk of suicide reattempt significantly. Again, future studies could aim at investigating whether the preventive effect of these interventions is (partly) mediated by internal entrapment.

A further aspect relevant for clinical practice is the fact that defeat, internal, and external entrapment are subject to fluctuation (Stenzel et al., 2020), therefore, repeated measurement in clinical practice seems to be necessary. O'Connor and Williams (2014) highlighted that positive future thinking can already be affected by minor fluctuations in defeat and that these effects are higher in individuals with feelings of entrapment. Hence, the time courses of these constructs should be investigated more closely in future studies and potentially need to be monitored repeatedly in clinical practice in order to observe their changes in the course of therapy. A promising method to investigate time courses of constructs and to assess constructs repeatedly in future studies is smartphone-based ecological momentary assessment (EMA), which allows to collect data in real time and in subjects' natural environment within short time intervals from minutes to hours (Santangelo et al., 2014; Trull & Ebner-Priemer, 2009, 2014). It has been established in empirical research to overcome the limitations of questionnaire based retrospective assessments that face memory bias and a lack of ecological validity (Ebner-Priemer & Trull, 2009).

Strengths and limitations

The results of this study should be interpreted in the light of some strengths and weaknesses. Major strengths of the study are the sample of individuals reporting high levels of suicidal ideation, since participants were inpatients admitted to a psychiatric ward due to a recent suicide attempt or an acute suicidal crisis, and the prospective design with four measurements over the course of 12 months. Another strength of the study is the assessment and separate analyses of both internal and external entrapment leading to theoretically and clinically relevant new results.

A potential limitation of the present investigation is the number and timing of the follow-up assessments. Because of the number of follow-up assessments, no random slope models could be computed with suicidal ideation as an outcome. Additionally, follow-ups were conducted after 6, 9, and 12 months. Recent research suggests that defeat and entrapment are subject to intra-individual fluctuation across short time intervals such as minutes or hours (Stenzel et al., 2020)—similar to other risk factors such as thwarted

belongingness, perceived burdensomeness, capability for suicide, interoception, and suicidal ideation itself (Forkmann et al., 2018; Höller et al., 2021; Hallensleben et al., 2019; Kleiman et al., 2017; Spangenberg et al., 2015, 2019). Thus, the timing of the follow-up assessments could have led to the fact that important information about the dynamic nature of the constructs between assessments could not be captured. However, most importantly, our results suggest that internal entrapment is predictive of suicidal ideation and internal entrapment as well as defeat are predictive of a change in suicidal ideation even across long time intervals of several months corroborating its general importance in understanding the development and course of suicidal ideation. It could be speculated that defeat and entrapment would have been even more predictive of suicidal ideation across shorter time intervals, which should be investigated in future studies.

Another point that is important to be discussed is the possible influence of the inpatient setting on the feelings of external entrapment. Patients could have experienced more external entrapment in the T0 assessment than in the follow-up assessments due to their admission to a psychiatric ward. High levels of external entrapment could be interpreted as being caused by the rather closed setting of the psychiatric ward. Alternatively, a high level of external entrapment may have existed prior to admission and may have been partly responsible for the development of the suicidal crisis that ultimately led to admission. The reduction of external entrapment from assessment to assessment, as can be seen in Table 1, could also possibly be due to the participants' discharge from the psychiatric ward. Again, alternatively, the psychosocial crisis, which can be assumed to have occurred prior to admission and may have caused the elevated levels of external entrapment at that time, may have been resolved during inpatient treatment. Thus, lower external entrapment scores were reported at later measurement points.

One could make similar assumptions about the other constructs assessed in this study, because suicidal ideation, internal entrapment, and defeat were also highest at the first assessment (T0). However, the association between suicidal ideation and external entrapment was not significant. This emphasizes the assumption that, even though, participants experienced higher levels of external entrapment in the inpatient setting this might have not contributed to their suicidal ideation.

Last but not least, a major limitation of this study is that the sample is underpowered (Kleiman). Therefore, it could be possible that further effects could not be detected due to the limited power.

CONCLUSION

The aim of this study was to investigate central assumptions of the motivational phase of the IMV model with respect to

associations between defeat, internal entrapment, external entrapment, and suicidal ideation. Results showed significant associations of defeat and internal entrapment with suicidal ideation and changes in suicidal ideation suggesting external entrapment to be less relevant than internal entrapment. Moreover, defeat and internal entrapment predicted changes in suicidal ideation over the course of several months. Thus, results corroborate the central assumptions of the motivational phase of the IMV model and highlight the necessity of distinguishing between internal and external entrapment. For clinical practice, it might be important to focus on feelings of internal entrapment in therapy in order to prevent the development of suicidal ideation. Future studies should focus on the assessment of moment-to-moment feelings of defeat, internal, and external entrapment in order to improve our knowledge on the temporal course of these clinically important constructs.

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CONFLICT OF INTEREST

All authors declare that they have no conflict of interest.

DATA AVAILABILITY STATEMENT

All relevant data are reported within the paper and are available from the corresponding author upon reasonable request.

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