Dreams in psychotherapy: An empirically supported model of the relations of dreams to the course of psychotherapy

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Summary. From the beginning, interpretation of dreams has been an integral part of psychoanalytic psychotherapy. Nevertheless, there is still only limited empirical support for psychoanalytic dream theory and the practice of dream interpretation in psychotherapy. This paper aims at providing an empirically supported theoretical model of how dreams are specifically related to psychopathology, the topics that are focused in psychotherapy, and the general course and results of psychotherapy. 1. The findings of empirical and clinical dream research – as they relate to the field of psychotherapy – are summarized which support some of the general concepts of psychotherapeutic dream work. 2. The findings of Structural Dream Analysis (SDA) are summarized, which builds on clinical dream research and has reached the point to present a theoretical model which can explain the relations between dreams and improvement gained in the course of psychotherapy. The core concept that was found is a hierarchical typology of dream patterns which are characterized by different levels of agency of the dream ego. 3. This theoretical model is tested in a series of statistical analyses. The theoretical model is largely confirmed. These findings can inform future research as well as assessment and clinical practice in the field of psychotherapeutic dream work.

Keywords: Dreams in psychotherapy, dream interpretation, empirical dream research, clinical dream research, typical dream patterns, psychotherapy process

1. Introduction

The use of dreams in psychotherapy as a systematic method of intervention has been an integral part in the development of psychotherapeutic methods since Freud's (1900) seminal publication "The Interpretation of Dreams" (Giovanardi 2021). In psychoanalysis, there has been controversy around the understanding of the meaning and function of dreams and the proper approach to dream interpretation from the beginning, resulting in a plurality of different contemporary approaches (for an overview see Roesler 2023). But there is overall agreement, even beyond psychoanalysis, that dreams can be used in psychotherapy as they point to the conflictual themes that have to be addressed, and they contain elements which support the process of therapy (Schredl et al. 2000); there is evidence that the use of dream work provides an additional contribution to improvement gained through psychotherapy (Hill 2004). It has to be noted that Hill calls her method Cognitive-Experiential Dream Work, but it actually has many parallels to Jung's approach to dreams, including a collection of associations, assessing

connections to the waking life of the dreamer, and drawing conclusions from the discussion of the dream for actual changes in the life of the dreamer.

On the other hand, following the discovery of REM-sleep, an extensive body of findings has accumulated in the context of empirical dream research. This has influenced the development of psychoanalytic dream theories, and has, by and large – and in contrast to the original intent of this research to falsify psychoanalytic ideas – provided evidence for most of the psychoanalytic ideas about dreams, specifically that they carry meaning, are connected with the waking life of the dreamer and its emotionally relevant topics, and are therefore a helpful tool in psychotherapy, though some of Freud's original ideas (e.g. that the dream is the guardian of sleep) need to be rejected (for details see Roesler 2023). Parallel to empirical dream research, a tradition of clinical dream research has developed (Fonagy et al. 2012), which aims at investigating the relationship between dreams, psychopathology and improvement in the course of psychotherapy. The aim of this paper is first to present an overview of the findings of these research traditions – largely neglected in psychoanalysis – which makes clear that still there is no systematically tested theoretical model of the function and meaning of dreams as they relate to the aims and course of psychotherapy. On this background, the findings of the ongoing research project Structural Dream Analysis (SDA) are summarized, which builds on clinical dream research and has reached the point to present an empirically supported theoretical model of the relations of dreams to initial psychopathology and to improvement over the course of psychotherapy. The components of this model are then statistically tested. This aims at providing a more

empirically based theory for research and clinical practice in the field of psychotherapeutic dream work.

2. Overview of Empirical and Clinical Dream Research with Relevance for Psychotherapy

Barrett & McNamara (2007) summarize the results of empirical dream research: in the dream, the brain is in a mode where it does not have to process new input but can use larger capacities for working on problems and finding creative solutions. The dreaming mind especially focuses on experiences in waking life that have emotional meaning for the dreamer and can find solutions for problems more readily compared to waking consciousness because it is able to connect different areas and functions of the brain. In contemporary theories of dreaming (Hartmann 2010) there is general agreement that dreams reflect the efforts of an individual to adapt to reality: the dream is "an unconscious attempt to find a solution to an emotionally relevant concern." (Gazillo et al., 2020, p.187). In general, research on the content of dreams found that it is closely and systematically correlated especially to emotionally relevant topics and stressful events (Zadra & Domhoff 2010). Hall and Van de Castle (1966), who developed a coding system for the content of dreams, argued that it is possible to draw a personality profile based only on the dreams of a person. Furthermore, there is substantial continuity in the themes in dreams of a person over a long period of time (Levin, 1990), but the themes in the dreams change when a person goes through psychotherapy (Cartwright 1977). Greenberg & Pearlman (1978) compared the content of dreams of subjects undergoing psychoanalytic treatment with verbatim minutes from the previous and the subsequent therapy session and found a clear correspondence. Palombo (1982) was able to show that in dreams analysands reworked contents from the directly preceding analytic session that could be recognised as such without decoding. Popp et al. (1990) compared dream reports and reports in the therapy session with an interpretive research methodology known as the Core Conflictual Relationship Theme. Here not only similarities of content but even correspondences in the unconscious underlying relational conflict patterns were ascertained. Extensive empirical studies have also been carried out by the psychoanalysts Kramer & Glucksmann (2015). A very clear connection could be made between the dreamer's emotionally significant experiences and the themes that arose in the dreams. In sleep laboratory studies, they were also able to show that in the dreams of one night one prominent emotional theme was repeatedly reworked and that this dream content even over 20 nights did not fundamentally change. They explicitly summarise: the emotional intensity of the experience determines its effect on the dream. This effect is so strong that independent evaluators can identify the person's immediate and long-term significant themes from dreams alone.

Clinical dream research in psychoanalysis investigates empirically the relations between dreams and therapeutic change over the course of therapy, starting with Alexander (1925), which aims at overcoming the solely interpretive approach usually applied in psychoanalysis (Fonagy et al. 2012). More recent psychoanalytic research papers on dreams generally examine connected dream series over the course of the psychotherapy (Fischmann et al. 2012), since it was found that logical structures of various dreams in the same person are interconnected so that all these dreams are components of a single communication structure.

Dream content can reflect changes or improvement of a patient throughout the psychotherapeutic process. A number of case studies (Eudell-Simons et al., 2005) found significant changes in dream content over the course of therapy, e.g. that pleasant emotional content of dreams increased in conjunction with positive clinical change. Those changes in dreams reflected the clinical improvement by more adaptive and integrated actions of dealing with problems and conflicts. The overall pattern of patient's dreams throughout the therapeutic process corresponded to progressive changes in dynamics and personality structure, in selfrepresentation, defenses, interpersonal relationships, transference reactions and resolution of core conflicts. Ellis (2016) investigated qualitative changes in nightmares from five patients suffering from PTSD after successful trauma-oriented treatment. After the trauma-oriented treatment, the identity of the dream aggressor changed from known to unknown or vice versa, the dream ego actions progressed from passive to active responses (shifting from freeze to flight to fight, seeking help or taking action) and settings changed from original trauma settings to including more elements from current life.

Patients who improved over the course of psychotherapy compared to non-improved patients showed significant changes in the manifest dream content in contrast to the non-improved patients with only little change in the dream content (Eudell-Simons et al., 2005). In successful treatments the initial dreams with masochistic or self-punitive themes changed to later dreams with greater self-soothing capability and more self-satisfying themes. Depressed patients who showed little clinical improvement did not experience a change of masochistic themes in their dreams.

A series of prominent investigations within German-speaking psychoanalytic dream research is based on records of psychoanalytic treatments in the context of the Ulm Textbank (overview in Fischmann et al. 2012). Leuzinger-Bohleber (1989) examined 112 dreams from five long-term psychoanalytic therapies, consisting in each case of dreams from the first and last 100 sessions, based on the coding system used by Moser & von Zeppelin (1996). She ascertained that in positive treatment courses the dreams at the end of the therapy differed from those at the beginning, which was not the case in unsuccessful therapy. In successful therapy the spectrum of affects in the manifest dream contents expanded and anxiety dreams were less frequent than at the beginning of the treatment. There were more successful than unsuccessful solutions to problems and the dream ego was more active and less frequently in the observer position. The relationship quality changed, became friendlier and more caring, negative emotions about the self in the dream lessened and the capacity for successful problem-solving increased (similar findings in Pap et al. 2021). The German study on long-term treatment of chronic depression (LAC), in which dreams were investigated, found that in successful psychoanalytic therapies there are positive changes of the dream atmosphere, more successful problem-solving in the dreams, an extension of the spectrum of affects experienced in the dream; the dream ego changes from a perspective of an observer to active involvement, and there are more helping figures in the dream narrative (Fischmann & Leuzinger-Bohleber, 2018). ".. the problem-solutions in the dream contain references to turn-

ing-points in the psychoanalytic treatment and therapeutic changes" (Leuzinger-Bohleber 2013, p. 267, transl. quotation). Döll-Hentschker (2008) also used the coding model of Moser & von Zeppelin (1996) to examine 142 dreams from five psychoanalyses and obtained very similar results: intra-individual differences between the beginning and end of treatment, when there was a positive course of treatment, as opposed to minor or negative changes in failed treatments. Similar results were also found by Kächele in various studies (overview in Kächele, 2012, see also the case Amalia X from this sample presented in detail below). The results showed that the percentage of successful problem-solving strategies increased in the dreams at the end of the therapy, whereas the unsuccessful strategies reduced. The emotional atmosphere in the dreams also changed at the end of the treatment, as negative emotions about the dream ego itself reduced. Kächele (2012) concludes that changes during the treatment are clearly reflected in the change in the structure of the dreams (see also Glucksman & Kramer 2004, 2012). It is now well established that working with dreams in psychotherapy contributes significantly to improvement over the course of therapy compared to a group in which dreams were not addressed (Fiss 1979; Hill 1996, 2004; Glucksman & Kramer 2012; Eudell-Simmons & Hilsenroth 2005). Even though these research findings provide clear insight into the existence of a connection between dreams and the course of therapy, e.g. concerning the affects involved, nevertheless more specification about the role and meaning of dreams in psychotherapy is needed. The research presented below aims at contributing to a clarification of this question.

3. The Research Program „Structural Dream Analysis"

In empirical dream research, a number of research approaches have been developed to investigate the meaning of dreams (Schredl et al. 2022). The term 'meaning of the dream' refers to the idea, not only in psychoanalytic theories of dreaming, that dreams convey additional (unconscious) information about important topics for the person which can then be used constructively in psychotherapy. Often these methods involve the coding of content elements in the dreams, e.g. the occurrence of certain symbols (e.g. Hall and Van de Castle 1966). The problem with this approach, from our point of view, is that the elements of the dream are taken out of context, the context of the dream itself as a kind of story as well as the context of the single dream being part of a series – it was already pointed out above that dream series circle around topics which are taken up again and again. It was also pointed out that apparently dreams refer to important themes in the current life situation of the dreamer as well as to the personality and unresolved problems. In psychoanalytic research on dreams there is often the problem that certain assumptions about the function of dreams are taken for granted. For example, the Moser & von Zeppelin (1996) coding system is based on the assumption that the function of dreaming is to protect sleep and so investigates the changing positions of elements and affects in the dream which 'evidences' this function. But as it is, this coding system is not able to falsify any Freudian assumptions. In contrast to that, we would stress the point that the research methodology should avoid overloading with theoretical presuppositions. In the method Structural Dream Analysis (hereafter, SDA) (Roesler 2018b), we attempted to minimize the inclusion of any theoretical assumptions about the dream. SDA assumes that the meaning of dreams is not so much transmitted by the elements or symbols in the dream but more by the relationship between elements in the dream (i.e., structure - not to be mistaken with the psychoanalytic use of the term structure in the sense of structure of personality), especially the relationship of the dream ego to other elements in the dream and the extent of agency of the dream ego. This approach is more interested in identifying patterns than in coding elements, especially patterns of relationship of the dream ego to other figures and elements in the dream; e.g. whether the dream ego is in an active or passive position regarding the actions occurring in the dream, whether the dream ego is actively authoring what is happening in the dream or is subjected to other figures' actions. SDA sees the dream as a narrative which allows for the use of analytic tools developed in narratology (for more details see Roesler 2018b). In narratology, a narrative is defined as a development from a starting point, which is a problem that needs repair or solution, and how the protagonist deals with the problem and eventually solves it. Thus, a dream is a short story about how the protagonist, in most cases the dream ego, processes a problem. There are a number of approaches in dream research which have taken a similar viewpoint (Sparrow 2020), e.g. the concept of active control of the dream ego over the happenings in the dream, or the measuring of the occurrence of problems within a dream (Schredl 2018, p. 48). SDA is a qualitative, interpretive research method that attempts to formalize the process of interpretation of the dream in a way that the conclusions are independent from the interpreter (see below for reliability tests). The meaning conveyed by the dream is analysed in a systematic series of interpretive steps for which a formalized manual is available (Roesler 2018b).

This methodological approach implies a strong reduction of the many levels of meaning contained in the dream. It is not our intention to create the impression that we do not see any more levels of meaning in a dream. On the other hand, an important aim of scientific research is reduction of complexity so as to be able to identify general rules and patterns and to draw connections between different levels of investigation. This is the intention of SDA and the specific intention of the present paper.

3.1. The Phases of Research with SDA

In a first phase, in which the methodology was developed, a complex set of (narratological) methods of analysis was applied to well-documented single cases in an inductive (bottom-up) manner of qualitative analysis, i.e. the researchers attempted to identify typical, repetitive patterns characterizing the dream series of the case from the text alone, without carrying theoretical concepts into the material. The narratological methods included (1) Agency of the dream ego (see Tab. 1) which focuses on the role the narrator takes in the narrative in terms of activity vs. passivity and his/her relation to other protagonists in the narrative, and (2) Functional Analysis which reduces the complexity of the dream into abstract patterns (e.g. the dream ego is threatened, flight, the dream ego confronts the threat etc.).

A detailed description of the methodology of this first phase of SDA and its application to a case example can be found in Roesler (2018b). In this first phase, 15 well-documented cases with a total of 206 dreams were thoroughly

Table 1. Levels of agency of the dream ego.

Levels of agency of the dream ego
1. Only-other-initiative: The initiative comes from other actors in all phases of action. The ego is therefore never in the subject position.
2. Embedding in foreign initiative: The ego is in the subject position one or several times in the course of the plot development but does not hold this position at the beginning and also at the end of the episode.
3. Handing over of initiative: The ego appears as initiator at the beginning of the narration, possibly in parallel with other characters, but is in the object position at the end of the episode.
4. Assumption of initiative: The ego is in the object position at the beginning of the action phase but assumes the subject position at the end of the plot.
5. Resumption of initiative: the ego is in the subject position at the beginning as well as at the end of the plot development. In the course of the episode, however, other characters are also in the subject position.
6. Only-ego-initiative: the initiative comes from the ego in all phases of the plot. Thus, the ego is in the subject position throughout.

investigated with this extensive, single case analysis form of SDA (for details see Roesler 2018c).

In a second phase, with these 15 cases analysed as a basis, a cross-case analysis was conducted which aimed at identifying interindividually typical patterns of dreams; for these means, a qualitative analysis following the Grounded Theory methodology (Glaser & Strauss 2009) was conducted aiming at identifying categories which were typical for a number of cases in the sample and forming a theoretical model. These patterns were connected with the initial level of psychopathology of the patients as well as with the course of therapy and improvements gained, and the crucial explanatory variable was found to be the agency of the dream ego. As a result of this phase, a typology of dream patterns was created (see Tab. 2) - initially, there were only five patterns, to which later the sixth pattern (autonomy

Table 2. Typology of dream types/patterns.

Typology of dream types/patterns
Type 1: No dream ego present The dream ego does not participate in the plot (dreamer observes a scene as if watching a movie).
Type 2: The dream ego is threatened The dream ego is threatened or pursued by a threatening figure
2.1 The dream ego is completely destroyed, damaged, dismembered, severely wounded, or even killed.
2.2 The dream ego is overwhelmed, i.e. is completely powerless, no coping strategy.
2.3 The dream ego flees from the threat.
2.4 The dream ego defends itself, i.e. has a strategy, but the threat remains.
2.5 The dream ego successfully defends itself against the threat (threat transforms to non-dangerous).
Type 3: The dream ego is confronted with a performance requirement (e.g. an examination) set by other characters in the dream: find something (which was previously lost), give something to someone, etc.
3.1 The dream ego fails, e.g. fails the test; is subjected to the control of others, against its will, cannot do anything about it.
3.2 The dream ego has prepared, but encounters obstacles. The task is ultimately not solved.
3.3 The dream ego is subjected to the requirement, but successfully copes with it through its own activity.
Type 4: Mobility dream The dream ego is on the way somewhere (specified or unclear destination): dream ego follows its own initiative, tries to implement its own intentions or plans.
4.1 The dream ego is locked up in a room, trying to find its way out or to break out, but failing.
4.2 The dream ego wants to move, e.g. travel, but has no means, e.g. misses the train.
4.3 The dream ego moves successfully, encounters obstacles and locomotion cannot be continued.
4.4 The dream ego is in motion, encounters obstacles, the desired destination is not reached.
4.5 The dream ego manages to move successfully and reaches the desired destination.
Type 5: Social interaction The dream ego is trying to communicate with someone, to create a satisfying encounter (includes sexuality).
5.1 The dream ego wants to get in contact with others, but is ignored by the others.
5.2 The dream ego comes into contact with others but encounters obstacles; all in all, the attempt to establish a desired contact fails.
5.3 The dream ego is successful in establishing the desired contact.
Type 6: Autonomy dream The dream ego establishes or defends its autonomy.
6.1 The dream ego is flooded by the affection of others.
6.2 The dream ego is aggressive towards others (even kills them), which expresses the will of the dream ego to be separate and independent from others.
6.3 The dream ego is on its own and content.
6.4 The dream ego helps others (has so many resources left that it can provide them to the others, but it is the initiative of the dream ego)

dreams) was added as a result of the analysis of further material. Additionally, a theoretical model was developed of the relations between dreams/dream patterns, initial psychopathology and the course of psychotherapy (for details see Roesler 2018c). With this typology it was possible to categorize more than 90% of the dreams in the study.

The dream patterns represent the general idea of SDA that the dream is a micronarrative in which a problem is presented which the dream ego has to struggle with, i.e. the ego is confronted with a requirement, has to cope with a challenge, or attempts to fulfil a plan or task. The agency of the dream ego rises continually starting from Pattern 1 (no ego present at all); in Patterns 2 and 3 the dream ego is present but under pressure from other forces in the dream and the initiative is not with the ego but it is subjected to their power and control; in Patterns 4 and 5 the ego has taken over the initiative and attempts to follow a personal plan, in Pattern 5 this focuses on creating satisfying relationships with others; finally, in Pattern 6 the dream ego gains full autonomy from others and can move freely. The same movement towards more agency of the dream ego applies to each of the patterns, e.g. inside pattern 2 there is a movement from pattern 2.1 with a completely powerless dream ego to 2.5 in which the dream ego successfully overcomes the threat.

3.2. The Theoretical Model

The dream patterns can be interpreted psychologically as an expression of the capacity of the dreamer's ego, on different levels, to regulate or cope with emotions, motivations and complexes. The extent of agency of the dream ego is equivalent to what psychoanalysis calls ego strength or maturity of the personality, i.e. the degree of integration of ego and other parts of the psyche into the whole of the personality and the capacity of ego functioning (Blanck & Blanck 1974).

In those cases in which psychotherapy was successful, such that there was an improvement in symptoms, psychological well-being, regulation of emotion and, from a psychoanalytic point of view, a gain in ego strength (structural integration of the personality), we found a typical pattern of transformation in the structure of the dreams (see fig. 1). Typically the first phase of the psychotherapeutic process was dominated by a repetitive pattern in the dreams, which showed a weak dream ego incapable of solving the problem presented in the dream: e.g. the dream ego is threatened and typically has no strategy to cope with the threat, but flees or attempts to hide; in Pattern 3 dreams in which the dream ego has to fulfill a task it typically fails, is not prepared, is too late etc.; in mobility dreams (Pattern 4) the dream ego typically fails to reach the desired aim, is on the wrong bus or train or has no ticket etc. If psychotherapy is successful, the typical patterns change into more successful activities of the dream ego: e.g. it confronts threatening figures, fights actively and successfully overcomes the threat, successfully fulfills the tasks (e.g. passes an exam) or succeeds in reaching the desired aim and controlling the means of transportation. In general, there is a movement from lower patterns (1, 2 and 3) dominating the first half of the dream series, in which the dream ego is subjected to others initiative or even threatened, towards patterns 4, 5 and 6 in the second half of the dream series, in which the dream ego gains more and more agency and solves the problem in the dream successfully, e.g. is more and more capable of creating satisfying interactions with others, including sexual encounters, or even makes itself contently independent from others. This transformation is interpreted from a psychodynamic perspective as speaking to the fact that an initially weak ego structure which fails to regulate and integrate threatening emotions, impulses and complexes, gains in ego strength over the course of the therapy and more and more succeeds in coping with initially suppressed
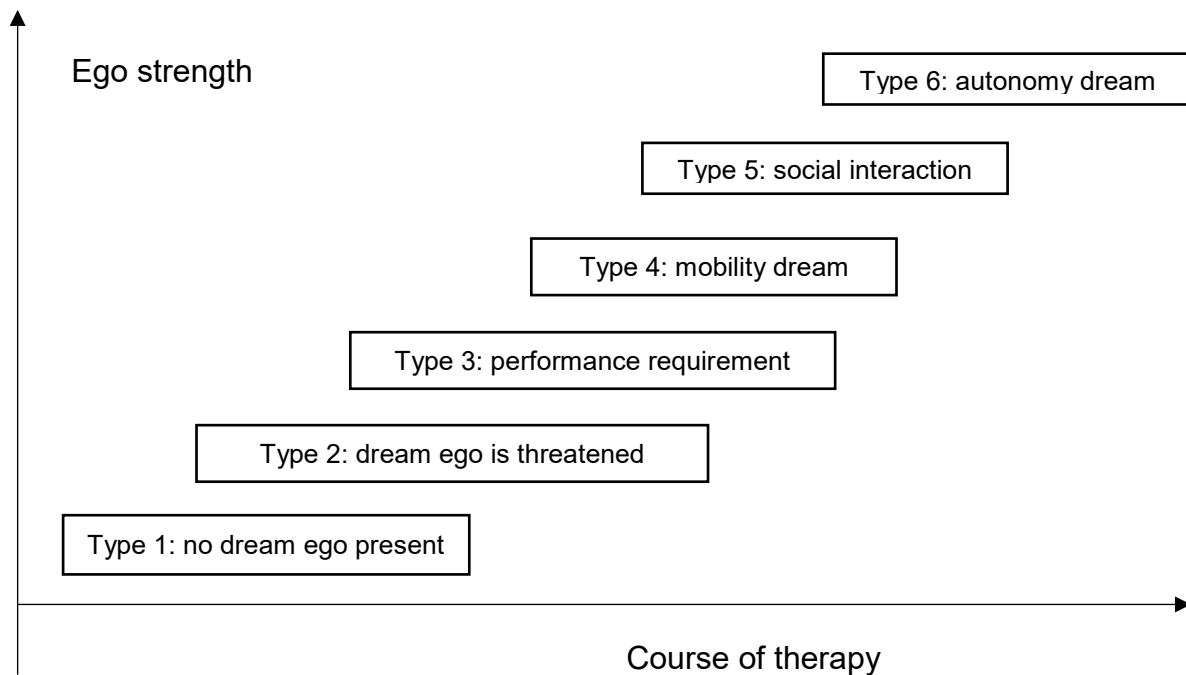

Figure 1. Dream patterns, ego strength and course of therapy.

or split off parts of the psyche and integrating these into constructive interactions with others. These gains are reflected in real life by the ego becoming capable more and more to execute willpower, conduct its plans, reach aims and express its needs in social interactions. This follows the model of personality integration as formulated by Operationalized Psychodynamic Diagnostics (OPD) Task Force (2008, see below). We also hypothesize that there is a close connection between the initial level of ego strength of the personality at the start of therapy on the one side, and the dominating pattern in the first half of the dream series on the other, in the sense that level of ego strength is reflected in the level of the dominating dream pattern; e.g. patients whose dreams are shaped mainly by the threat - escape pattern (2) usually struggle with structural problems around an unstable ego and personality, whereas patients with dreams of mobility (pattern 4) and interpersonal relationships (pattern 5) seem to have more integrated personalities and higher ego strength and are preoccupied with more neurotic and interpersonal problems.

3.3. Symbolization

Beyond that, we hypothesize that the relationship between the dream ego and threatening figures and the reaction of the dream ego to the threat is imaging the relationship between actual ego strength and unintegrated or conflicted parts of the psyche (complexes), unconscious and repressed needs and motivations. The special form the threatening figure takes in the dream – especially if the dream pattern is repetitive – can be seen as symbolizing the psychological problem, the complex or repressed impulse with which the dreamer is struggling. On the other hand, we found no support for the psychoanalytic assumption that there are typical or even fixed meanings for specific symbols. Example: In the case of a female dreamer, the dream ego is repeatedly threatened by snakes. In this case, the therapist diagnosed an unresolved conflict between a highly moralistic superego on the one hand and very lively but repressed sexual desires on the other. The snake here can clearly be interpreted as a sexual, phallic symbol, which appears threatening to an ego under the pressure of the moralistic superego. In contrast to that, in the dreams of a young man the snake repeatedly has the role of a helper. In sum, symbols appearing repeatedly in dream series can often be interpreted as symbolic images for parts of the psyche, its impulses and complexes which are not yet integrated into the whole of personality and which therefore appear threatening to ego integrity. But the symbol has to be interpreted in the context of the personality and life course of the dreamer.

To test this theoretical model, we investigated the hypothesis that in cases in which therapy is successful an upward movement through the dream patterns over the course of the dream series can be found being an expression of a gain in ego agency, as well as the hypothesis that the severity of the psychopathology is reflected in the initial level of the dominant dream pattern.

4.   Methods and Results

4.1. Data Material/Samples

It has to be noted that finding appropriate material for an investigation of the theoretical model and the hypotheses formulated above is difficult. The material has to meet a number of criteria: the case has to be completed; detailed diagnostic information is needed about the case as well as about the course and results of therapy and the case must include a series of dreams which ideally cover the whole course of therapy. The above questions were tested with a sample of 86 case reports from the archives of a psychoanalytic training institute in Germany with varying numbers of dreams per case. These extensive case reports were compiled by training candidates about their training cases in the years 1991-2018 and are a compulsory part of the training requirements. They contain detailed diagnostic information (ICD diagnosis, biographical data, psychopathological symptoms, a psychodynamic model of the personality, major conflicts/complexes etc.) as well as a detailed account of the course of therapy, the major themes that were worked on as well as an evaluation of the development of the personality, the improvements gained and the overall results of therapy; finally, they contain the dreams which were discussed in the course of therapy. The patient's age ranged from 14 to 55 years with a mean of 33 years, with 73% female and 27% male patients. Mean duration of therapy was 195 sessions.

4.2. Coding Procedures

For the investigation of dream series, the typology of dream patterns (Tab. 2) was used as a coding system and values were assigned to the categories (e.g. dream pattern 1 = 1, dream pattern 2.1 = 2, dream pattern 2.2 = 3 etc.; see below Tabs. 4 and 5). Each series of dreams was coded by at least two independent raters, who received a training based on the manual. Interrater reliability was assessed to compute a reliability coefficient (square-weighted Cohen's kappa coefficient) and an interpreter agreement was found of k = .70 - .82. 5-10% of the dreams in a series usually cannot be assigned to one of the above dream patterns and are coded n.a.

For evaluating the initial severity of the psychopathology of the patients in the sense of the level of structural integration of personality a rating scale was developed for use in the research project based on the levels of personality structure described in Operationalized Psychodynamic Diagnostics (OPD Task-force 2008)(for details see supplementary material).

Table 3. Codings for severity of psychopathology (level of structural integration of personality).

Code	Description
1	Low structural integration (3) with more severe course of disease and with chronification of symptom disease
2	Low structural integration (3) without more severe course of disease and without chronification of symptom disease
3	Conflict schema – moderate structural integration (2 to 3), with more severe course of disease and with chronification of symptom disease
4	Conflict schema - moderate structural integration (2 to 3), without severe course of disease and without chronification of symptom disease
5	Neurotic conflict (good integration) with severe course of disease and chronification of symptom disease
6	Neurotic conflict (good integration) without severe course of disease and without chronification of symptom disease

For the evaluation of the results of therapy in the sense of improvement the information contained in the case reports was condensed and finally categorized into 1 = improved, 0 = unchanged, -1 = non-successful.

4.3. Statistical Analyses and Results

4.3.1 Case-by-case analysis

For the 86 cases (with a total of 1290 dreams and a mean of 15 dreams per case) the dream series were coded as described above; 8% of the dreams could not be coded and were dealt with in the further statistical analyses as 'missing completely at random' (MCAR). The dreams were classified according to the dream patterns (see Tab. 2), the dream patterns were assigned to ordinal categories with values from 1 to 16 (Tab. 4). There is a certain overlap of some patterns which are assigned to the same values due to theoretical considerations, i.e. they are considered from a psycho-analytic point of view as representing the same level on a scale of ego strength (for details see supplementary material). Data analyses were conducted in Excel (Version 16.60). To determine statistical significance, the Non-Parametric Spearman Rank Correlation was used (α = 5%; two-tailed), because the values of the dependent variable are ordinal scaled (no meaning can be attributed to the distances between the numerical values of the coded dream patterns).

Correlations were calculated for independent (metric) variable: sequence of dreams over time (1-X) and dependent (ordinal) variable: dream pattern (values 1 to 16). For successful cases, it was hypothesized that there would be an upward movement from lower to higher dream patterns over the course of therapy (positive correlation of dream pattern and number of dream in the series) (the distribution of dream patterns over time/course of therapy is illustrated in a graph, see below Fig. 2). A regression line was calcu-

Table 4. Coding manual: assignment of values to dream patterns.

Dream pattern	Value
1-1	1
2-1	2
2-2	3
2-3	4
2-4	5
3-1	5
3-2	6
2-5	7
4-1	8
3-3	9
4-2	9
4-3	10
4-4	11
5-1	11
5-2	12
6-1	12
4-5	13
5-3	14
6-2	14
6-3	15
6-4	16

lated for each case, which clearly illustrates whether and how pronounced the increase or decrease of the dream categories is over the course of the therapy, and it was calculated whether the slope of the regression line was significant over the whole dream series of the case. This procedure is illustrated with the following case example with 27 dreams (Tab. 5 and Fig. 2).

A case by case inspection of the curves for dream patterns in the graphs confirmed that there is a correlation between the curve progression and the result of therapy for 71% of the cases (upward movement for successful therapies, downward movement for failed therapies, no change for unchanged patients). For 66% of successful therapies the hypothesis was confirmed that there is an upward movement parallel to the course of therapy, though only in 15 of 86 cases (17.5%) the correlation (independent (metric) variable: sequence of dreams over time and dependent (ordinal) variable: dream pattern) was statistically significant, with varying effect sizes (r = .45 - .84, p < .05). In general lower dream patterns (1, 2 and 3) are more frequent in the first half of therapy and thin out towards the end of therapy, whereas the sec-ond half is dominated increasingly by higher order dream patterns (4, 5 and 6). Typically, a case starts with pattern 2 dreams, and the last dream of the series usually is a pattern 5 or 6 dream.

It became quite clear that there was a higher probability for significant results if the number of dreams for that case was considerably higher than the mean number of dreams in the sample, i.e. 25 dreams or more. On that background,

Table 5. Case example, coding of a dream series with 27 dreams.

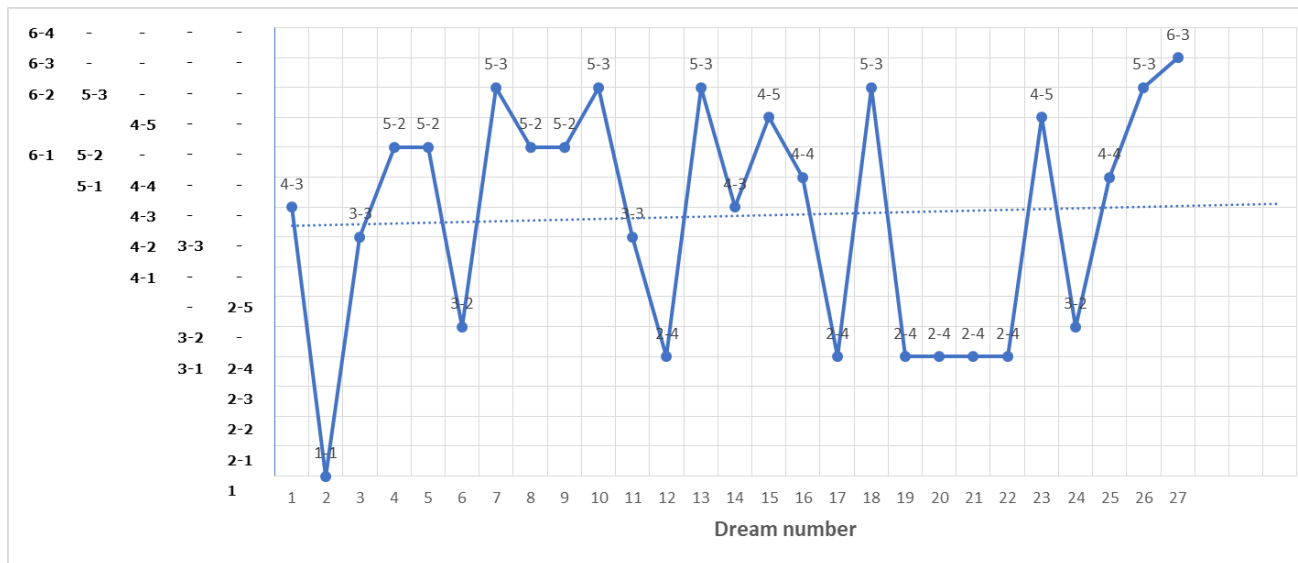| Dream number	Dream pattern	Value
1	4-3	10
2	1-1	1
3	3-3	9
4	5-2	12
5	5-2	12
6	3-2	6
7	5-3	14
8	5-2	12
9	5-2	12
10	5-3	14
11	3-3	9
12	2-4	5
13	5-3	14
14	4-3	10
15	4-5	13
16	4-4	11
17	2-4	5
18	5-3	14
19	2-4	5
20	2-4	5
21	2-4	5
22	2-4	5
23	4-5	13
24	3-2	6
25	4-4	11
26	5-3	14
27	6-3	15

Figure 2. Case example, curve of dream series with 27 dreams and regression line.

we recalculated the above correlation for the non-significant cases based on the assumption that the dream series in a case would contain more than the actual number of dreams available for the case (e.g. 25 instead of 9 dreams) while the distribution of dream patterns was maintained. As a result of that recalculation, in addition to the 17.5% of cases that were significant an additional 59% of cases became significant. So it can be assumed that the low rate of significant cases in the first calculation is due to the limited number of dreams for many cases.

4.3.2 All-dreams-sample analyses

In a different approach to statistically test our hypotheses we selected 43 cases from the above sample with a sufficient number of dreams (above the mean of 15 dreams/case) in the series and with only very few or no dreams coded n.a. These dreams were not analyzed case-by-case but treated as a total sample, but in addition to the values assigned to each dream according to dream pattern, each dream was assigned a value according to rank in its specific series of dreams respectively case (e.g first dream in the series, last dream in the series).

The considerations behind this statistical approach are as follows: The data from the coded dream patterns are dependent data, as they each belong to one case, i.e. they depend on different dreamers. In the first analysis (1) to test the hypothesis that the dream patterns increase in the course of successful therapies investigated the course of the dream patterns on a case-by-case basis using non-parametric correlations for ordinally scaled data (in this case: Kendall's rank correlation). For the correlations between dream patterns and progress in therapy found for each individual case, it can then be calculated whether these are positive on average and significantly different from 0. The final analysis (4) using a multilevel model takes into account the dependency of the data from the outset, and thus determines the course of the data depending on the higher level, the dreamer. However, because the hypothesis also states that the course of the dream patterns generally increases from low dream types at the beginning to high dream types

at the end of successful therapies, but not necessarily linearly, two further analyses were conducted, which examine mean differences between initial dreams and later dreams. In analysis (2), mean values are formed from the first and last three dreams and these are compared with a test for non-parametric, dependent data (Wilcoxon test). In order to test the hypothesis that dream patterns are generally lower at the beginning than later, the dream patterns can also be examined across cases. Therefore, in analysis (3), the dreams were all taken together and assigned to a first and a second half of therapy and their averaged dream patterns are compared using a test for non-parametric, independent data (Mann-Whitney U-Test).

(1) A Kendall's Rank Correlation was calculated for each dream series separately. In a next step, the variable Kendall rank coefficient was analyzed with a one sample T-test, revealing a significant positive mean correlation ($M = 0.178$, $t(42) = 4.547$, $p < .001$).

(2) The variable dream pattern was then analyzed calculating the mean values of the first and last three entries of each dream series and then tested with a one-sided Wilcoxon-Test between mean values, revealing a significant difference between the first (more low level patterns) and last (more high level patterns) three dream pattern values of a dream series ($T(43,43) = 155$, $p < .001$).

(3) In a further analysis of the variable dream pattern, the dream series were divided in half. If the number was odd, the dreams were alternately counted to the first and second half. The dream patterns of the first half were compared to those of the second half using a one-sided Mann-Whitney-U-Test, which revealed a significant difference between dream patterns of the first and second halves of the dream series, parallel to the above findings ($W(291,291) = 34003$, $p < .001$).

(4) Lastly, the variable dream pattern was analyzed with a multilevel analysis. A random coefficients model was used to take into account the serial structure of the level-1 dream patterns within the level-2 subject dream series. This longitudinal categorical data analysis can investigate the effect of time in the series (level-2) on the dream pattern (level-1). The time variable results from the relative progress status

in the dream series, i.e. the position of the dream number relative to the last dream in each series. As in previous analyses, those pairs of data that could not be coded were removed. This results in a data set with 582 dreams from 43 dream series. The model equation for the analysis: $Y_{ij} = \gamma_{00} + \gamma_{10}x_{ij} + U_{0j} + U_{1j}x_{ij} + R_{ij}$. The multilevel analysis revealed a significant increase in dream pattern within a dream series over all series. The fixed effect for the level-1 predictor variable was $\gamma_{10} = .313$ ($SE = .737$), $t(582,43) = 4.246$, $p < .001$. The slope indicates mean increase in dream pattern at 0.1 progress of the dream series.

4.3.3 Connection between initial level of psychopathology and dominant dream patterns at initiation of therapy

For investigating the hypothesis that there is a connection between the initial level/severity of psychopathology at beginning of therapy and the dominant level of dream pattern in the first part of the dream series the diagnostic information provided in the case reports was coded for each case using the coding scheme presented in table 3. In general, the findings support the hypothesis. The majority of the patients with low structural integration of the personality showed an accumulation of dream patterns 1 or 2 in the first phase of therapy compared to patients with higher structural integration. The majority of higher structured personalities (moderate or good structural integration of the personality) dreamed predominantly in higher dream patterns. Those patients with the highest structured personalities (neurotic conflict) showed rarely patterns 1 or 2 in the first half of the therapy.

4.3.4 Counterexamples

We received a dream series containing 208 dreams covering a period from 2017 to 2020 from a dreamer not undergoing psychotherapy. Since the person did not receive any treatment no therapeutic change was expected, and thus we hypothesized that there would be no upward movement in the curve of dream patterns. A calculation using the Non-Parametric Spearman Rank Correlation found no significant changes in the distribution of dream patterns over the course of the series ($p = .6227$), which confirmed the hypothesis.

It was pointed out above that the 86 case reports originally were compiled by training candidates to be presented in examinations, therefore in this sample failed cases are very rare. One of the rare exceptions (case F12; see supplementary material) reports a so-called negative therapeutic reaction. Around session 25 the therapist identified a destabilization, paranoid anxieties and depersonalization in the 25-year old male patient, and finally the patient terminated the therapy; the therapist regards the case as failed. Statistical analysis of the coded dream series found a significant and strong, but negative correlation ($r(15) = -.569$, $p = .027$), which means that the curve of dream patterns in the graph showed a downward movement. Interestingly, the collapse of the therapeutic relationship around session 25 can be identified in the dream patterns as from that point on there

4.4. Single Case in-depth Studies

As was pointed out above, many of the cases contain too few dreams for a proper statistical analysis. For this reason,

we searched for well-documented cases with large series of dreams published in the psychoanalytic literature.

Amalia X. The so-called specimen case Amalia X is a Freudian psychoanalysis of more than 500 sessions, which was fully documented on video and transcribed in the context of the Ulm Textbank, and was subject of a number of empirical investigations; it is considered to be the best investigated case in the history of psychotherapy research (Kächele 2012, Kächele et al. 1999, 2006). This case included 95 dreams which were discussed over the course of therapy. These dreams were subject of a number of studies as well (for an overview see Roesler 2020). The following information on the case is taken from Kächele et al. (2006): The female patient (35 years of age at the beginning of therapy) suffers from a disorder of her self-esteem and recurring episodes of depression (F34.1 dysthymia). The restrictions on her self-esteem were connected with her hirsutismus—the virile growth of hair all over her body since puberty — which resulted in social insecurity, and her defensive mechanisms included a compulsion neurosis as well as symptoms of anxiety, erythrophobia (the fear of blushing). These problems had a negative effect on her ability to form personal relationships and even more on sexual relationships – at the beginning of therapy she had not had any sexual contacts.

A number of standardized measures were applied to document the success of therapy (Freiburger Persönlichkeitsinventar (FPI); Gießen-Test, self- and therapist-assessment). Results show a significant improvement, a reduction in psychosomatic symptoms, a stabilization of mood and self-esteem and a rise in extraversion; these results remained stable in the follow-up (Kächele et al., 2006). Positive self-esteem increased significantly during the course of treatment, negative self-esteem showed a significant and continuous decrease. Earlier studies of the case (Kächele et al. 1999) identified a steady trend from negative dream emotions at the beginning to positive emotions towards the end of the analysis as well as a steady systematic change in the problem-solving activity of the dream ego escalating as the analysis proceeds. Merkle (1987) found systematic changes in the later dreams compared to earlier ones regarding relationships, which became more friendly and tender, a development towards a more positive dream atmosphere and improvements in problem-solving.

In the statistical analysis of the 95 dreams each dream was coded independently by two raters (Cohen's Kappa Coefficient, $\kappa = 0.814$, $p < .001$). As it is considered to be a very successful therapy, we hypothesized that we would find a significant upwards movement from lower to higher patterns as well as a gain in initiative of the dream ego. This was statistically confirmed: Nonparametric Spearman Rank Correlation is significant, $r = .29$, $p = .003$ (see fig. 3). There is an accumulation of dreams pattern 2 in the first phase of therapy, whereas the second half of therapy is dominated by pattern 5. One of the last dreams is a characteristic autonomy dream (Pattern 6), in which the dreamer walks on her hairs (note the specific disorder of hirsutismus) into the practice of her analyst, says goodbye and leaves on her own, contently autonomous.

Our findings regarding the patterns that dominated the first half of therapy parallel findings by Albani et al. (2003) using the Core Conflictual Relationship Theme method (CCRT): They found significant changes in the narratives at the end of therapy expressing more autonomy, and a reduc-
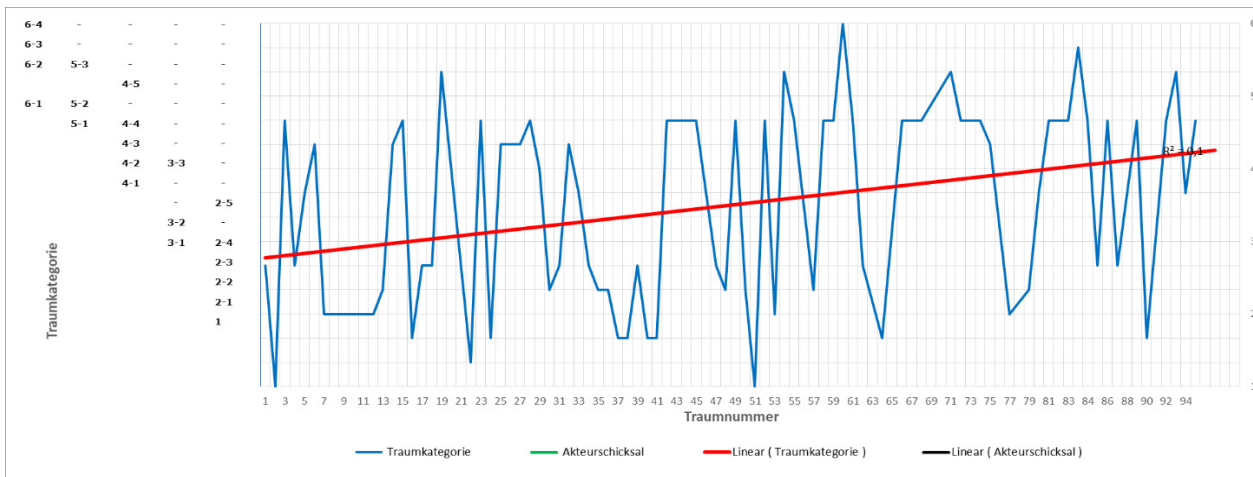
Figure 3. Amalia X, distribution of dream patterns and regression line.

tion of experiences of being dependent and weak, unable to set limits and frustrated.

The case C.L. The well-known German psychoanalyst Alexander Mitscherlich (1983) published the well-documented case C.L., considered to be highly successful, containing 103 dreams, to be used in research. The statistical test (Nonparametric Spearman Rank Correlation) again confirmed our hypotheses ($r = .30$; $p < 0.01$; Interrater reliability $\kappa = 0.854$, $p < .001$). Parallel to the progress of therapy, there is a movement from lower to higher dream patterns, starting with a number of pattern 1 dreams - which would speak for a low level of ego strength, confirmed by Mitscherlich (1983) - and the second half of therapy being dominated by patterns 4 and 5. Over the course of therapy, the dream ego increasingly succeeds in coping with tasks, solving problems and creating satisfying social interactions. For example, a major topic in the dream series is encounters with men, which in the first half of the dream series are generally unpleasant and, in many cases, even threatening. This motif changes over the course of therapy, encounters with men become more satisfying, and by the end of the dream series men even become rescuers of the dream ego in threatening situations (change in the motif from pattern 2 to pattern 5 dreams). This goes parallel to the changes in the real-life relationships of the patient.

In contrast to the above long-term psychoanalytic psychotherapies, Vömel (2020) tested and confirmed our hypotheses using a case of psychodynamic short-term psychotherapy (with 26 dreams).

5. Discussion

The statistical analyses aimed at testing the main hypothesis contained in the theoretical model, that there is a close connection between, on the one side, the extent of agency of the dream ego and the general structure of the dream – representing successful actions of the dream ego and its capacity to deal with problems and create desired conditions in the dream – and the course of therapy on the other side, in the sense that there is improvement in the patient in terms of growing ego strength and integration of the personality. The significant findings in the statistical tests support the hypothesis. There is further support from the single case studies. It seems that the better the case is document-

ed and the more dreams per case are available, the stronger is the confirmation of the hypothesis. It has to be noted that the hypothesis tested here is just one part of the total model of SDA, presented above, so this is not evidence for the different patterns and the assumed scale they form.

In addition to the results of the statistical analyses, there were more elements which support the theoretical model in more detail. A number of features were found to be typical for the graphs as illustrated in Fig. 2: typically, there is a fluctuation in dream types across the dream series instead of a linear curve, which was expected, as it reflects the typical nonlinear improvement in therapy processes; as a part of this nonlinear development, typically in the mid-phase of therapy a 'regression' to a series of pattern 2 dreams can be found, which we interpret as follows: as a consequence of the establishment of a secure therapeutic relationship in the initial phase of therapy, which also strengthens the ego, the psyche becomes capable of confronting the central complex/unconscious conflict, which is staged on the level of dreams in the imagery of the dream ego being threatened - following this 'confrontation phase', typically a quick rise towards patterns 5 and 6 can be observed, which marks the termination phase of therapy. Concerning the connection between initial level of psychopathology and dominant dream patterns at initiation of therapy, the results support the hypothesis that the personality structure, and thus psychopathology, of patients is closely related to the dream patterns. In summary, our findings provide support for the viewpoint on the relationship between dreams and the course of psychotherapy which has been called the 'stage model' (for details see Roesler 2023): the dream seems to be an imaginal space in which the inner drama of conflicting forces in the psyche is performed as if on a stage. The stronger the inner conflicts, the more dramatic appears the questioning of the ego; parallel to the support the ego receives in the therapeutic relationship, it becomes more capable to confront with the unintegrated forces, becomes more capable to cope with them and finally reaches a level of autonomy in which it can decide to follow its own plans, make itself independent of others etc. In the course of this increasing integration, formerly unintegrated aspects/impulses, which appeared as threatening figures, change into helpers for the dream ego. In that sense, dream ego agency as differentiated in the structural model presented here is a measure for

ego strength and psychological integration of the personality. Dreams in psychotherapy mirror the personality and psychological problems as well as the development of the person over the course of psychotherapy. The developing ego strength of the client is reflected in the scope of action that the dream ego is able to initiate in relation to other figures, as is documented by the dream patterns described by SDA. Thus, the information about the personality structure is not just shown in static symbols and images but rather in patterns of the relationships between the dream ego and other figures in the dream. Also, dream patterns change accordingly to the development the patient and his/her inner world takes over the course of therapy.

There are findings from earlier research which parallel our findings and provide additional support for the SDA model. Varvin (2012) demonstrated that dreams of PTSD-patients showed patterns of frequent deterioration, destruction of the dream ego, threatening elements, and passive behavior of the dream-ego, in contrast to the high agency of the dream ego in the control group. The author found the same relationship as in the present paper between psychopathology of the dreamer, dream structure and agency of the dream ego and concludes that the dream provides information about the dreamer's ego strength. Accordingly, Ellis (2016) found typical changes in the dreams of patients with posttraumatic stress disorder after they had received treatment, moving towards more successful dream ego agency. Mathes (2021) emphasizes that it is not only the aversive dream content that makes a dream a nightmare, but the agency of the dream ego is decisive. Schredl (2018) confirms the idea that in nightmares the failing capability of the dream ego is pictured to deal with inner conflicts and problems. Sándor, Szakadát & Bódizs (2016) found that the presence and activity of the dream ego in the dreams is strongly correlated with the extent of effective coping and emotion regulation in the waking life of the dreamer. According to Foulkes (1982), in young children's dreams, there is usually no dream ego, this only emerges at the age of about seven, parallel to the development of ego strength.

Güven and Bilim (2018) investigated a theoretical model which correlates immature defense mechanisms, dysfunctional attitudes and interpersonal relationship styles with disturbing dream themes, and could provide empirical support for their model (see also Yu 2013). In a study by Euler et al. (2016) using the OPD system a correlation was found between the level of personality integration in the form of maturity of defense mechanisms and dream imagery. SDA is the first conceptualization – to our knowledge – which integrates such findings and the considerable body of clinical dream research theoretically and combines an elaborate theoretical model of the relations between dream themes and structure, psychopathology and the course of psychotherapy with a detailed methodology to investigate (changes in) dreams in the context of psychotherapy process. This new model allows for more specific investigations into the relationship between psychological problems, dreams and psychotherapeutic change. It has already stimulated a number of studies which apply SDA to a variety of research questions in the field of dream interpretation; e.g. the model presented here was found to be inter-culturally applicable (Roesler, Konakawa & Tanaka 2021).

6. Limitations to the methodology and outlook on future research

The quality of the 86 cases from the Institute archives as material for this study was limited in so far as the reports were written by the therapist responsible for the treatment – so it can be expected that they present their cases as successful. No objective measurement of the improvements gained over the course of therapy was conducted, and even the categorization we made to successful versus non-successful may be critical – in contrast, the case Amalia X included an objective measurement of the improvements. For future research, it is highly important to be able to use material which is documented in more detail, includes more dreams as well as an objective measurement of the effects of therapy. For this reason, a new research project was initiated which combines a quantitative outcome study (with standardized measures for psychological symptoms and functioning) with a detailed qualitative analysis of the cases (applying a standardized single case reporting frame) and the complete documentation of all the dreams that were reported in the time from start to end of psychotherapy. Based on this material, we hope to be able to present more detailed insight into the connections between development in psychotherapy and changes in the themes and structure of dreams in future publications.

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