

Live Action Role-playing (Larp) in Cognitive Behavioral Psychotherapy: A Case Study

Abstract: Role-play is an established tool in psychotherapy. Recent literature has indicated the similarities between live action role-playing (larp) and psychotherapy. In cognitive behavioral therapy (CBT), which is one of the most widespread therapeutic approaches, Role-play is a tool for developing desired target behavior (Fliegel 2020). This also applies to so-called skills groups in CBT. One form of these skills groups is the Gruppentraining sozialer Kompetenzen (Hinsch et al. 2015). Some literature has highlighted the similarities between role-playing methods used in CBT-oriented skills groups and larp (Aschenbrenner 2013, Balzer 2008). A deficit in social skills is associated with a variety of mental disorders (Segrin 2001). The use of a CBT-oriented larp may therefore be helpful in the treatment of several mental disorders. A standardised form of CBT-oriented larp in the sense of a clinical manual does not yet exist. There is also no empirical evaluation with questionnaires of such a therapeutic larp yet. This article presents the implementation and empirical evaluation of a standardised CBT-oriented larp. This clinical case study was conducted with 6 patients with mental disorders.

Participants were aged 30 years or younger and all had at least one affective disorder. Established clinical screening questionnaires were used for assessment. Data were collected in a pre-post follow-up design. The study shows that this CBT-oriented larp is feasible with people with mental illness. Qualitative data show good goal attainment and positive experiences among participants. Short-term positive developments were also found in the screenings. However, an empirical statement about the effectiveness of the larp is not yet possible; in the long term, the screenings even show negative trends.

Keywords: cognitive behavioral therapy, larp, manual, affective disorders, longitudinal, live action role-playing

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1. INTRODUCTION

1.1 Theoretical Background

Role-play is a foundational component of established forms of psychotherapy such as psychodrama (Kipper, 1992). Recent publications have indicated the similarities between so-called live action Role-playing (larp) and psychotherapy (Diakolambrianou 2021; Burns 2014; Fatland 2016; Linnamäki 2019; Mendoza 2020).

Larp is a form of role-playing, which has so far mainly been used in the leisure sector. Participants play a role of their own choice in a suitable costume and act out a mostly pre-structured story set in a fictional or historical setting (e.g., medieval fantasy) (for a more comprehensive definition, see Tychsen 2006, 254-255).

In a larp, there are the players (also called player characters, PCs), who take part. The PCs play a role (a character) that they have thought up beforehand and improvise in the game acting how their character behaves. Conversely the game is driven by extras who offer interaction to the PCs, so-called *NPCs* (non-player characters). They often know information about the game that the PC are not fully aware of and that the PCs can learn from the *NPCs*. Sometimes *NPCs* are just simple interaction partners for the presentation of trade or combat.

The game is managed by one or more game masters (GMs). The GM usually has an overview of the whole game. The GM can give instructions to the *NPCs* on how to behave towards the PCs, but also towards the PCs if there are any rule ambiguities, for example. The GM is, so to speak, "in charge" of everyone in the game.

In the field of education, there are already several programs in which larp is used as a medium to improve social skills, among other things, but empirical quantitative verification is still lacking (Geneuss 2019, 88-95). This is also and especially true for therapeutic applications.

In cognitive behavioral therapy (CBT), which is one of the most widespread therapeutic approaches, role-play is an important tool for developing desired target behavior (Fliegel 2020). This also applies to so-called skills groups in CBT. One form of these skills groups is the *Gruppentraining sozialer Kompetenzen* (group training of social skills, GSK) (Hinsch and Pfingsten 2015).

Some literature has highlighted the similarities between role-playing methods used in CBT- oriented skills groups like GSK and larp (Balzer 2008; Aschenbrenner 2013). Jensen (2022) has presented empirical evidence of larp for increasing social skills in human resource development. Of particular note is a program described by Fein (2015, 2018) in which young people with autism spectrum disorder experience social skills enhancement through larp.

However, these publications remain predominantly theoretical or descriptive in nature and do not make empirical claims about the effectiveness of larp as a method.

1.1.1 TTRPGs and Psychotherapy

For the related medium of so-called *tabletop role-playing games* (TTRPGs), there is already somewhat more literature showing the effects of recreational role-playing on mental health (Arenas et al. 2022). TTRPGs, unlike larp, take place at a table and a shared story is told. Participants are usually not in costume and put themselves in their roles using only minor tools (for example, a game board and game pieces).

At their core, however, both types of role-playing game are very similar. In both types of game, participants create a PC and then interact with each other and with NPCs. In both cases, there is a GM who runs the game and interacts with the PCs. For this study, the following feature is particularly important: in both larp and TTRPG, PCs can try out a completely new behavior without it having any real consequences for their everyday life.

However, as described above, the academic discourse on psychological benefits of TTRPGs is more advanced than on larp. There is an active community of researchers and practitioners who have been working on the implementation of therapeutic TTRPGs for several years (Atanasio 2020; Connell et al. 2020). Manuals have also recently been published on the therapeutic use of TTRPGs (Connell et al. 2023; Kilmer et al. 2023) in this environment. Several scientific articles have presented the potential of TTRPGs for mental health (Baker et al. 2022), documented their feasibility (Abbott 2021, Rosselet and Stauffer 2013) or provided first empirical evidence that TTRPGs have a positive impact on mental well-being (Lehto 2021). And in a recent study, Varrette et al. (2022) presented for the first time a peer-reviewed, quantitative study demonstrating the effectiveness of a CBT-oriented TTRPG on improving social anxiety.

Because of the strong similarities between TTRPG and larp, research and development on therapeutic larp can benefit from TTRPGs in several ways. First, here are already structured manuals for conducting therapeutic TTRPG, which a therapeutic larp can be modelled on. Second, the first studies on the feasibility and effectiveness of psychologically helpful TTRPG show good results. Replication studies with a similar design could take place here for therapeutic larp.

Finally, some of the efficacy factors already discussed in the literature for TTRPG are likely to apply to larp because of the structural similarity. These factors include, for example:

1. Testing and reinforcing new, helpful behavior (Varrette et al. 2022). Reinforcement in the context of *operant conditioning* is a core element of CBT (Staddon and Cerutti 2003).
2. The ability to look at oneself “from the outside” and take over the perspective of others (*mentalization*) likely to be trained in the RPG (Lukka 2013). A deficit in mentalization seems to correlate with mental health problems (Larmo 2010); therefore perspective taking is practised in established CBT skills groups (Laugeson and Park 2014).
3. “The intentional blending of CBT with TTRPGs allows players to experience role-play exposure situations in a low-risk environment” (Varettte et al. 2022, 2). Balzer (2008) and Cierjacks (2002) emphasise that in larp (as a therapeutic method), too, one of the main factors of success could be the testing of new behaviour in a *sanction-free space*.
4. A prerequisite for the therapeutic effectiveness of RPG in general is that there is also a transfer of everyday life from the experiences in the role-play to real life. This spillover effect is also called the *bleed effect* and has been reasonably well studied (Bowman 2013). Such an effect is more likely with careful debriefing (Diakolambrianou 2020). CBT is characterised by highly structured preparation and follow-up of interventions to ensure transfer to everyday life.

In summary, taking the literature on TTRPG and mental well-being as a starting point, it is at least theoretically possible to assume that a CBT-oriented larp can provide transferable positive psychological effects to real life.

1.1.2 Larp in Psychotherapy: Possible Applications

In contrast to TTRPG, however, larp also involves ongoing physical activation. This could also have a positive impact on the success of the therapy. First, physical activation is an effective intervention especially for depressive disorders (Ledochowski et al. 2017). Second, the simultaneous activation of cognitive, emotional, physiological, and behavioral levels is particularly conducive to potentially new learning experiences in larp (Cierjacks 2002, 21). These four levels are also addressed in CBT to alleviate mental disorders (McManus 2022). In CBT, larp could therefore be a particularly suitable method for increasing social competence, as the literature mentioned so far shows.

An improvement in social competence has a positive effect on interpersonal problems. Interpersonal deficits are in turn a core problem in many mental disorders (Segrin 2001) such as depression (Huprich et al. 2016) and social anxiety (Tonge et al. 2020).

Specifically, problems with social skills can, for example, lead to people being more lonely and having fewer social contacts as a resource, so that stressful life events are more likely to lead to depression than in people with larger social support networks (Segrin and Flora 2000). Also, people with adequate social skills can manage interactions with others effectively and more often with positive outcomes (Segrin and Flora 2000). Specifically, this means, for example, being better able to stand up for one’s own needs (Hinsch and Pflingsten 2015, 26). The frustration of needs can in turn lead to depression (Pietrek et al. 2022). The extent to which social competence deficits have an explicit influence on social anxiety is not clearly proven, but the subjective perception as socially incompetent leads to avoidance of social situations and can thus promote a social anxiety disorder (Kolbeck and Maß 2009).

For these reasons, improved social skills could also reduce depressive symptoms and social anxiety. The CBT-oriented larp presented here offers the possibility to modify desired behavior in general. For example, a participant in CBT larp can concretely increase self-efficacy (Maddux and Meier 1995), increase self-esteem (Huprich et al. 2016), or stand up better for one's own needs (Hinsch and Pfungsten 2016, Pietrek et al. 2022), which in each case can reduce depressive symptoms (see the literature behind each term).

Another disorder that correlates with social skills deficits and social skills experiences is Internet addiction (Leménager et al. 2018). This is the first reason why a CBT-oriented larp with a focus on social skills could also help with Internet addiction. Secondly, fantasy larp could be particularly suitable for reaching individuals with Internet addiction, especially in cases of addiction of so-called massively multiplayer online role-playing games (MMORPGs). Wölfling et al. (2019) describe that individuals with Internet addiction have particular motivational problems for therapy. MMORPGs and larp are similar in content (Tychsen 2006), which is why larp as a method could facilitate an attractive, low-threshold entry into psychotherapy for people who would otherwise not do therapy.

Last, the author of this study had the impression from an unpublished preliminary evaluation conducted internally that personality accentuations (or disorders) may have a negative impact on larp effectiveness. This is due to the fact that certain personality disorders are subject to particularly negative cognitive evaluations, which may diminish one's perceived success in a therapeutic larp. However, this is only a practical observation.

1.2 Research desideratum

To my knowledge, there is no empirical study to date that examines the practical feasibility of a CBT-oriented therapeutic larp and its impact on patients using qualitative questionnaires and scientific clinical screening questionnaires simultaneously. Empirical studies are lacking in the therapeutic and educational larp fields (Geneuss 2019, 88-95).

The author of this study has developed a standardized program to achieve specific psychotherapeutic goals during a one-day larp. This therapeutic larp is CBT-oriented. The feasibility of the therapeutic larp was first tested in an unpublished preliminary evaluation, which, however, was only carried out with mentally healthy participants. The present study aims to 1. show the feasibility of a CBT-oriented larp with mentally ill participants and 2. examine whether participation in this therapeutic larp can also be reflected in clinical screening questionnaires on the basis of six individual clinical cases. A pre-post follow-up design was chosen for this purpose. The screening questionnaires are presented in more detail under 2.2 Data collection.

2. METHODS

The conduct of this study received a positive ethics vote from the Ethics Committee II of the University of Mannheim and is registered there under no. 2021-668. All requirements of the ethics vote were met in the conduct and evaluation of the study. Written and verbal informed consent was obtained from participants.

2.1 Presentation of the participants

Participants for this case series were addressed through advertising on social media and in the local press. To participate, the following criteria had to be met:

- The participant had to have a current mental diagnosis or at least a suspected diagnosis from the ICD-10 (Chapter V). Contraindications to therapeutic larp were excluded (see 2.5). These data were confirmed by the study investigator at the first contact before the preparatory interview by asking for symptoms and via written self-statement.
- The participant should be in a currently ongoing therapy or comparable supportive measure, because the therapeutic larp is intended to be only an adjuvant component of a larger psychotherapy.
- The participant should be a maximum of 30 years old and preferably have a rather high Internet consumption (however, this was not a mandatory criterion for participation).

In the following, the participants are introduced with a pseudonym in order to ensure their anonymity:

Participant 1 was *Riley*, a 25-year-old woman. She lived in assisted living for people with mental illness. In this residential facility, she lived everyday life as self-organized as possible. However, there was regular contact and support from professionals, such as social workers.

Riley did not have a partnership at the time of the study. However, she felt stable compared to earlier years and was happy to finally go to work regularly, in a print shop that belonged to the same organization as the residential facility. In everyday life, Riley found it particularly difficult to distance herself and say “no.” She attributed this biographically to the fact that her sister had been very angry and resentful if Riley had ever said “no” in childhood and adolescence (dysfunctional relationship scheme, which is maintained by avoidance nowadays).

Riley had a total of six inpatient treatments between 2016 and 2021 with a behavioral therapy focus and also dialectical behavioral therapy (*DBT*). The still-current treatment diagnoses were: Recurrent depression, Borderline personality disorder, and ADHD. Related to these disorders, she was taking medikinet, fluoxetine, and dominal. The initial treatments had still been predominantly about her psychological stabilization. In the inpatient behavioral therapy in 2019, a sufficient adjustment with the above-mentioned medications had then taken place. It was also important that she was able to develop the perspective of living in an assisted living group in the future during this stay. In behavioral therapy 2021, the focus was then on learning skills (for emotion regulation). She had practiced dealing with trauma-associated dissociations. And work had begun on her past. At the time of the preliminary interview for the larp intervention (t_0), the following symptoms persisted: reduced sense of self-worth (“self-hatred”), severely reduced self-confidence, insecurity in several (including social) situations, problems with regulating emotions, and difficulty with allowing emotions. She also found it very difficult to accept when she made mistakes. In addition, she stated that she still had unprocessed traumatic experiences, but that they did not currently trigger any symptoms.

Participant 2, *Robin*, was 26 years old, nonbinary gender, and also worked in a print shop with the goal of vocational rehabilitation. They also lived in assisted living, due to several pre-existing mental health conditions. They did not have a partner. As a biographical origin for their current mental health problems, they stated that they had a long history of bullying experiences and had been psychologically abused by their older brother. At the time of the

study, Robin nevertheless felt that they were making progress in their personal development and they felt stable overall. This was mainly due to the fact that further steps towards a more independent life were planned in the near future: Attending a boarding school and enrolling in a vocational training center. Between 2011 and 2020, they had attended a total of six psychotherapies (outpatient and inpatient). The main diagnoses were depression and borderline personality disorder. An older previous diagnosis was social phobia. Currently, an ADHD diagnosis was still ongoing. They believed that they had not received the correct diagnosis and had therefore been wrongly treated. They did not take psychotropic drugs. Robin had had a first stay in child and adolescent psychiatry in 2011. This was followed by inpatient behavioral therapies in 2016 and 2019, combined with DBT. In addition, they underwent a total of three partial inpatient behavioral therapies in a day clinic in 2017, 2019, and 2020. They still use the strategies they learned in everyday life today. Symptom areas that could not be solved sufficiently so far were emotion regulation and perceiving emotions; they avoided the perception of emotions as a maladaptive strategy as a result of learning experiences of bullying and abuse. In addition, low self-esteem was stressful for Robin (“self-hatred”).

Participant 3, *Liam*, was a 29-year-old educator, male, who was in a partnership but lived alone in his apartment. He said that one behavioral problem that came from his biography was that he always subordinated his needs to those of other group members (e.g., at work). He explained this by saying that as a child he only got attention when he was “sweet and conformed” (development of a dysfunctional relationship schema). He had been in outpatient behavioral therapy (weekly, individual) for 4 months at the time of study entry. The treatment diagnoses were depression and ADHD. As part of the ADHD, Liam also reported intermittent excessive Internet use. Liam was taking methylphenidate. Liam stated in the course of current behavioral therapy did he receive sufficient help because of this. He explained learning to “come clean with himself” and build resilience in psychotherapy. As a result of the methylphenidate, he had experienced an increase in drive and better concentration, and he was able to perform better. However, he still had strong problems regarding self-doubt and self-organization. He also stated that he usually subordinated his own needs to those of others (result of the dysfunctional relationship scheme).

Participant 4 was *Mia*, a 26-year-old social pedagogical assistant. She lived together with her partner. Mia was born abroad and lived with her mother and her mother’s family at first. There was no contact with the father. Mia’s childhood was characterized by having a bad relationship with her stepfather and the new family in which she lived with her mother. She had already undergone outpatient behavioral therapy in adolescence as well as a hospital stay and was currently undergoing behavioral therapy again (for about 1.5 years at the start of the study, about every 14 days, individual setting). Treatment diagnoses were depression and ADHD. She was taking escitalopram for the depression. She had also taken methylphenidate in the past. Mia had already been dealing with depression in her initial therapies. These persisted at the time of the study, and she described the depression as “up and down.” In addition, she had developed some behavioral compulsions. The ADHD had improved over the course of therapy, but the depression and compulsions described had not yet improved significantly.

Participant 5, Quinn, was a 22-year-old female warehouse logistics specialist. Quinn lived in an apartment with her partner. She explained that she found it difficult to approach people and be open because of her fears of being rejected. On the one hand, these had arisen because of bullying experiences at school. On the other hand, she had lived in foster care during her childhood and she also attributed her social anxiety to the unfavorable behavior of her foster parents. She was the only participant who had not had ongoing psychotherapy or comparable supportive care, but had only had individual medical appointments in the past for psychological complaints. Fears of rejection were also the main psychological complaint at the time of the study.

Participant 6, Emma, was a 30-year-old female doctoral student and single. Biographically, she attributed her problems in the area of saying “no” to the fact that her parents had not taken enough responsibility in the past. As a result, Emma had developed a great enthusiasm for many things, was very impulsive, but also felt “responsible for everything.” She attributed her difficulties in making decisions to her perfectionism. This would come from an old biographical core belief: “I have to do everything right to be accepted.” She attributed her time management problems to ADHD. She schedules too little time for individual activities and jumps back and forth a lot on tasks. Emma explained about the current life situation that she currently has a lot of stress and unfinished projects at work. Due to the Corona pandemic, she had to be isolated for a long time because of an immune deficiency. Because of this -- and the fact that she had moved -- she had experienced a lot of loneliness in the previous months. She had undergone four therapies in the past: inpatient behavioral therapy twice (2007 and 2008), outpatient behavioral therapy from 2008 to 2012, and outpatient behavioral therapy from 2018 to 2019. The treatment diagnoses were PTSD and adjustment disorder. In addition, she had ADHD. She was taking methylphenidate and she saw her doctor regularly for medication. Emma had experienced improvement in her impulse control, particularly with the methylphenidate, and in emotion regulation. Ongoing difficulties were: Self-organization, excessive perfectionism, difficulty saying “no,” fear of loss, and difficulty making decisions.

2.2 Data Collection

Data collection for the study took place at the same time as a preliminary interview for the therapeutic larp. From now on, this data collection point is called t_0 and took place 2 months before the larp. The preparation contents mentioned at the beginning were summarized for this study and a longer preparation interview took place. This was done with the help of a self-designed worksheet. The author moderated the preparatory talk. He will be referred to as the *therapist* from now on because he was the main therapeutic contact for the participants. How the preparatory talk proceeded in terms of content will be explained under point 2.5.

2.3 Implementation of larp therapy

Following the preparatory interview, the questionnaires described below were distributed. First, a questionnaire on qualitative data: This included demographic data; history of mental illness and prior treatment; information on current core mental health problems; and biographical background of the mental disorder. Participants' current living arrangements were also inquired about. In addition, participants were asked if they had experience with recreational role-playing.

In addition, five established screening questionnaires were completed, which can provide indications of mental health problems and disorders. As explained at the beginning, from a theoretical point of view, the therapeutic larp could be helpful for several disorders, which is why these specific screening questionnaires were selected:

- *Fragebogen zu sozialer Angst und sozialen Kompetenzdefiziten: SASKO* (a German screening for social anxiety) (Kolbeck and Maß 2009);
- *Beck-Depression Inventory Revision (BDI-II)* (German edition by Hautzinger et al. 2007): for the assessment of depressive stress;
- *Brief Symptom Inventory (BSI)* (German edition by Franke 2002): for assessing overall psychological distress across multiple symptom domains;
- *Personality Disorder Screening Short Form (PSS-K)* (a German 8-item screening for personality disorders) (Schöttke et al. 2011): to collect evidence of personality disorders and accentuations, which as mentioned may play a role based on our internal preliminary evaluation; and
- *Skala zum Onlinesuchtverhalten bei Erwachsenen (OSVe-S)* (a German screening for addictive behavior concerning the Internet) (Wölfling et al 2010): to assess possible pathological Internet use.

All participants completed these questionnaires as paper-pencil versions independently for the first time after the preparatory interview.

In the following, the results of this survey at t_0 are presented in table form for a better overview. The scores that are meaningful according to the test manual are presented in each case. For the individual tests, the characteristic values are described below, which provide indications of psychological stress or illnesses. Two important test quality criteria -- reliability and construct validity -- are also reported here.

SASKO (Kolbeck and Maß 2009): A global T-value is reported, based on a norm sample (for adults). Minimum T= 20, maximum T= 80. It is common to assume the following interpretation for T-values: <40: below average, 40 to 59: average, 60-69: slightly above average, 70-79: strongly above average, ≥ 80 : extremely above average. T-values above 59 are therefore conspicuous in the sense of the test and may be clinically relevant. In the SASKO there are also four subscales that can be considered individually. For these, a cutoff scale is given in the manual to see whether a scale is clinically relevantly elevated. The subscales are called (cutoff scores in brackets behind them) *fear of talking and being the focus of attention* (15), *fear of rejection* (13), *interaction deficits* (10) and *information-processing deficits* (9). The reliability of the SASKO can be rated as good overall, although the empirical validation of the reliability was only carried out with a mentally healthy sample (Kolbeck and Maß 2009). The construct validity is in the acceptable to good range (Kolbeck and Maß 2009).

BDI-II (Hautzinger et al. 2007): A sum score is reported. There are the following cutoffs: 0-9: indicates no or minimal depression. 10-18: indicates mild depression. 19-29: indicates moderate depression. 30-63: indicates severe depression. BDI-II (German version) shows good construct validity and reliability (Kuehner et al. 2007).

BSI (Franke 2002): A global T-score is reported, based on a norm sample (for adults), called *T(GSI)*. The interpretation of the T-value is the same as for the SASKO. Above-average values indicate a clinically relevant overall mental stress. The reliability of the BSI's global scale GSI used here is high in the empirical evaluation, a meaningful empirical evaluation of

construct validity is not yet available for the German version (Franke 2002). Nevertheless, it is a standard screening method used in practice.

PSS-K (Schöttke et al. 2011): A sum score is calculated. Minimum= 0, maximum= 16. A sum score ≥ 4 gives a first indication of a possible personality disorder. For 8 different personality disorders (sensu DSM-IV or ICD-10), values between 0 and 2 can be achieved in each case. In the case of the PSS-K, it is particularly important to emphasise that the screening only gives a very first indication of a personality disorder and that a much more extensive diagnostic procedure would be necessary to make a diagnosis. In the empirical evaluation, the PSS-K shows good construct validity and sufficient reliability (Schöttke et al. 2011).

OSVe-S (Wölfling et al 2010): A sum score is formed. Minimum: 0, maximum: 27. Score ≥ 7 indicates abusive Internet use, score ≥ 13.5 indicates Internet addiction. There are only a small number of evaluation studies to date, but these show good reliability and (construct) validity of the OSVe-S (Möbke et al. 2014, 33-58).

2.4 Participants' Data at Baseline t_0

In the following tables, values that indicate clinically relevant exposure are marked with * for all questionnaires. For the SASKO, all subscales are also presented in tabular form, as this is particularly relevant for the present study for the theoretical reasons mentioned. However, the raw scores are shown here, as these are usually used to assess a possible disorder.

2.4.1 Riley

Table 1: Screening results from Riley at t_0

Screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
Score	78*	25*	72*	9*	7.5*

Screening results from Riley at t_0 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 2: SASKO subscales from Riley at t_0

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	24*	22*	13*	13*

Results of the four subscales of SASKO from Riley at t_0 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

Rileys' PSS-K revealed indication of a possible dependent, paranoid, or schizotypal type personality disorder. Riley's scores on the subscales of the SASKO indicated manifest social phobia. These are the Speech and Midpoint Anxiety and Fear of Rejection subscales; as soon as a cutoff is exceeded in any of the scales, this is an indication from social phobia. The subscales indicating a subjective limitation of social competence also had values above the cutoff. These are the subscales Interaction Deficits and Information Processing Deficits.

2.4.2 Robin

Table 3: Screening results from Robin at t_0

Screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
Score	72*	22*	71*	9*	6

Screening results from Robin at t_0 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 4: SASKO subscales from Robin at t_0

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	19*	19*	12*	13*

Results of the four subscales of SASKO from Robin at t_0 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

In the PSS-K, Robin's responses indicated a possible dependent, paranoid, or schizotypal type personality disorder. Robin's scores on the subscales of the SASKO indicated manifest social phobia. The subscales indicating a subjective limitation of social competence also showed scores above the cutoff.

2.4.3 Liam

Table 5: Screening results from Liam at t_0

Screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
Score	67*	16*	70*	11*	10.5*

Screening results from Liam at t_0 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 6: SASKO subscales from Liam at t_0

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	12	18*	14*	10*

Results of the four subscales of SASKO from Liam at t_0 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

In the PSS-K, Liam's responses indicated a possible personality disorder of the histrionic, borderline, or obsessive-compulsive type. In Liam's SASKO the score in one subscale (Reject.) indicated manifest social phobia. The subscales indicating a subjective limitation of social competence also showed values above the cutoff.

2.4.4 Mia

Table 7: Screening results from Mia at t_0

Screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
score	74*	20*	72*	8*	7*

Screening results from Mia at t_0 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 8: SASKO subscales from Mia at t_0

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	22*	16*	15*	14*

Results of the four subscales of SASKO from Mia at t_0 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

In the PSS-K, Mia's responses indicated a possible personality disorder of the histrionic and obsessive-compulsive type. Mia's scores on the subscales of the SASKO indicated manifest social phobia. The subscales indicating a subjective limitation of social competence also showed scores above the cutoff.

2.4.5 Quinn

Table 9: Screening results from Quinn at t_0

Screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
score	69*	11*	74*	10*	5

Screening results from Quinn at t_0 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 10: SASKO subscales from Quinn at t_0

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	21*	13*	10*	13*

Results of the four subscales of SASKO from Quinn at t_0 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

In the PSS-K, Quinn's responses indicated a possible personality disorder of the dependent, histrionic, and paranoid type. Quinn's scores on the subscales of the SASKO indicated manifest social phobia. The subscales indicating a subjective limitation of social competence also showed scores above the cutoff.

2.4.6 Emma

Table 11: Screening results from Emma at t_0

Screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
score	51	8	59	3	1.5

Screening results from Emma at t_0 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 12: SASKO subscales from Emma at t_0

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	11	8	2	8

Results of the four subscales of SASKO from Emma at t_0 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

2.5 Rationale for Treatment

Looking at the participants' medical history and questionnaire results, it appears that all participants appeared suitable for the larp intervention. Five of the six participants had scores on at least one screening questionnaire each that indicated a manifest mental disorder. One exception was Emma. However, she had a persistent diagnosis (ADHD) and reported significant distress and functional impairment. In her case, this concerned, for example, the social skills of saying "no" and accepting one's own mistakes in social situations. Emma did not have critical scores in the screenings, but she described conspicuous social skills deficits that made her a suitable participant for the larp intervention.

Social (competence) deficits were demonstrated by the screenings in all participants except Emma, for which the therapeutic larp as described seems particularly appropriate. In addition, all participants described current or anamnestic depressive problems and in all of them (except Emma) these could be validated in the questionnaires. This was already an indication that the participants would also train certain aspects of social competence in the therapeutic larp, for which the larp seems particularly suitable as described.

Conceptually, the therapeutic larp training described here comprises several sections (Bartenstein 2022c):

- Problem analysis and goal setting, explaining the rationale of therapeutic role-play, test run;
- Communication of the concept: larp and larp therapy, creating a larp character;
- (Organizational) preparation of the game;
- Implementation of the game unit (300 minutes);
- Reflection and everyday transfer; and
- Checking target achievement, planning further transfers.

The preparatory interview took place as a group. Contraindications for the therapeutic larp were defined in advance by the author: acute psychosis, acute suicidality, advanced dementia, or acute substance intoxication. None of these were present in the participants. They also had to be physically healthy enough for a long walk in the woods.

All participants had therapy experience and were currently in psychotherapeutic or similar treatment. Quinn was an exception. She was included in the case series to make an exploratory comparison: Is therapeutic larp effective without adjunctive psychotherapy?

2.6 Implementation of larp therapy

2.6.1 Preparatory talk

At the beginning of the preparatory talk, all participants were told that they could still discuss sensitive issues privately with the therapist at the end of this session, in order to reduce avoidance due to shame or fear.

During the preparatory talk the therapist first explained therapeutic role-play and then the concept of therapeutic larp. The first point on the preparation sheet is the problem analysis in the group. The therapist worked out with the participants in the problem analysis which situations were difficult for the participants in everyday life and where they wanted to change something. In the second step, 1 to 3 behavioral goals were worked out for the therapeutic larp. For example, if a participant wrote in the 1st step, "It's hard for me to say no," then in the 2nd step a goal could be, "I want to say no in larp when I don't want something." In addition, possible obstacles to implementation were formulated. The last point for the worksheet was a trigger analysis, e.g., what participants do not want to experience.

Then, a larp character was developed with the participants that fit their behavioral goals. A self-developed worksheet with typical fantasy larp characters was used to support this. These "archetypes" were loosely based on the archetypes of C.G. Jung (2001).

After the preparatory talk, the first measurement (the baseline t_0) using clinical screening questionnaires took place.

The participants were then tasked with taking a closer look at their character over the next few weeks, coming up with a short backstory and getting props for the game.

2.6.2 Implementation of the therapeutic larp

About six weeks after the preparatory meeting, the actual therapeutic larp took place in a forest. The therapist as well as four co-therapists played the NPCs and were available as contact persons for the participants. The therapist was the only one accompanying the group the entire time and provided support to the participants to implement their behavioral goals. All co-therapists had experience with CBT larp from a previous implementation and they

were well informed about the participants and their goals.

A short briefing session was held at the beginning, during which rules and goals of the larp were reiterated by the therapist. The therapeutic larp took place at several stations where the co-therapists were waiting with tasks that claimed different aspects of social skills. The therapeutic larp is described in more detail elsewhere (Bartenstein 2022a, 2022b), which is why it is omitted here.

Participants predominantly had to take the initiative themselves to try out their behavioral goals within the larp. When participants were more passive, the therapist and co-therapists attempted to actively engage participants in the game. Overall, all participants successfully and actively interacted with each other and the co-therapists on several occasions. Thus, activation of at least one behavioral goal occurred for all participants. After just under five hours, the larp was completed.

A debriefing then took place. A structured, guided debriefing is important from a theoretical perspective, 1) for a potential spillover effect (Diakoulambriano 2020) and 2) for mental hygiene in general (Bowman 2014).

This final round was designed similarly to a behavioral therapy group session. The therapist and co-therapists provided feedback to participants on how they perceived them in larp.

Participants also provided feedback to each other and each participant reported on their experiences in the larp. This was already recorded in writing by the therapist on site during the debriefing.

Participants were encouraged to continue to engage with larp as a health-promoting method in the future. They then filled out an initial evaluation form regarding the achievement of goals and other experiences they had made in larp.

2.7 Results of the first written evaluation (t₁) and protocol

During the final round, the participants filled out an initial short evaluation form. This related to the participants' own perception of the game and the extent to which they considered their own goals to have been achieved. They could tick points from 1 ("not at all") to 6 ("completely"). Participants were also asked to comment in free text form. These are presented below. In addition, excerpts from the minutes taken during the final round about statements made by the participants are presented below.

Riley stated that she was able to implement her behavioral goals in larp to the following degree: Goal 1: 2/6, Goal 2: 3/6, Goal 3: 1/6. She wrote in response, "I thought everything was good except my own implementation."

Robin stated that they were able to implement their behavioral goals in the larp to the following extent: Goal 1: 4/6, Goal 2: 3/6, Goal 3: 5/6. They wrote: "The whole thing was a lot of fun! The puzzles were good and not too hard." They added verbally that it had been very important for them to get support from the therapist in the game when implementing the goals.

Liam stated that he had been able to implement his behavioral goals in the larp to the following extent: Goal 1: 5/6. He wrote that he positively evaluated the following: "The group dynamic, the structuring of the larp and the constant supervision by the therapist, as well as the players and supervisors being together."

Mia stated that she had been able to implement her behavioral goals in larp to the following extent: Goal 1: 5/6. She explained that it took time for her to arrive in her role, but

then went well. The larp had been a positive physical activation for her, and she was now positively exhausted.

Quinn stated that she had been able to implement her behavioral goals in larp to the following extent: Goal 1: 4/6, Goal 2: 5/6. She stated that she also found it difficult to get into character. However, she was very happy to have jumped over her shadow and tried it out.

Emma stated that she was able to implement her behavioral goals in larp to the following degree: Goal 1: 3/6, Goal 2: 5/6. She wrote: "Positive: 1. it was easy for us to get into the role, 2. the quests have a good level of difficulty, 3. great organization. Suggestions for improvement: 1. More role-play on quests achieved, 2. possibly repeat objectives and role again before playing, possibly in a separate meeting beforehand." She added verbally that it had been difficult for her to act out behavioral objectives with which she acted "against the group."

2.8 Follow-up Measurements

No further follow-up interventions took place. The participants were offered to contact the study leaders at any time to discuss their experiences in the following months. Liam and Mia made use of this offer.

Two follow-up measurements with the questionnaires already described took place (1. after two weeks, 2. after three months). In the following, only the main characteristics of the respective screenings are given in the tables (e.g., the total sums of the results) as well as the subscores of the SASKO. If there was a relevant change compared to t_0 (i.e. a score fell below a cutoff), this is also reported here in the continuous text for a better overview. Correspondingly results of subscales are reported only in case of relevant changes compared to previous surveys.

t_2 : Two Weeks Posttreatment. After the larp, the participants received the same paper-pencil questionnaires by mail that they had filled out before the larp. The qualitative questionnaire was not included again. Instead, a similar evaluation questionnaire to the one that the participants had filled out directly after the larp was now also given out again. There were 4 multiple choice questions:

1. In the past week I was able to successfully continue my goals (a, b, c) from the larp;
2. In everyday life I make myself aware of my larp character and its behavior;
3. I remember the larp as positive; and
4. I still benefit from the larp.

All questions could again be answered on a 6-point Likert scale from "not at all" to "fully." In addition, a free text field asked for further explanation of item 4 or other comments.

Participants completed the questionnaires two weeks after larp and returned them by mail. Below are the results of this measurement point, which from now on will be called t_2 .

2.8.1 Riley

Table 13: Screening results from Riley at t_2

Screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
Score	73*	22*	61*	12*	3

Screening results from Riley at t_2 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 14: SASKO subscales from Riley at t_2

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	23*	20*	10*	11*

Results of the four subscales of SASKO from Riley at t_2 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

In the PSS-K, Riley's responses at t_2 indicated a possible personality disorder of the dependent, histrionic, borderline, paranoid, or schizotypal type. The OSVe-S indicates decreased Internet use, which is now in the normal range, as opposed to the previously existing abusive use. In her evaluation form, Riley stated about her therapy goals that she was able to continue her goals to the following extent: Goal 1: 2/6, Goal 2: 4/6, Goal 3: 3/6. She was not able to bring much awareness to her character's behavior in everyday life: 2/6. She remembered the larp as positive: 5/6. However, she hardly benefited from it anymore: 2/6. In this regard, she wrote: "The larp itself was very good, but I have been dissatisfied with my performance."

2.8.2 Robin

Table 15: Screening results from Robin at t_2

Screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
score	73*	16*	61*	12*	4.5

Screening results from Robin at t_2 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 16: SASKO subscales from Robin at t_2

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	22*	20*	13*	12*

Results of the four subscales of SASKO from Robin at t_2 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

The BDI-II score at t_2 indicates mild depression (previously there was evidence of a moderate-severe episode). On the PSS-K, Riley's responses at t_2 yielded evidence of a possible dependent or schizotypal type personality disorder.

In their evaluation form, Robin stated about their therapy goals that they were able to continue their goals to the following extent: Goal 1: 4/6, Goal 2: 5/6, Goal 3: 4/6. In everyday life, they sometimes made themselves aware of the behavior of their larp character: 3/6. They remembered the larp as consistently positive: 6/6. They also still benefited from it (4/6) and described this as, "Every now and then I try to think of my goals from the larp, but don't always quite work out. But when I think about them, I can usually make them happen."

2.8.3 Liam

Table 17: Screening results from Liam at t_2

Screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
Score	66*	9*	67*	5*	7*

Screening results from Liam at t_2 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 18: SASKO subscales from Liam at t_2

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	17*	14*	10*	11*

Results of the four subscales of SASKO from Liam at t_2 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

The BDI-II indicates now minimal depression (previously there was evidence of a mild episode). In the PSS-K, Liam's responses at t_2 revealed no more evidence of specific personality disorders. The sum score was 5.

In his evaluation form, Liam stated about his therapy goals that he was able to continue his goals to the following extent: Goal 1: 4/6. In everyday life, he sometimes made himself aware of his larp character's behavior: 4/6. He remembered the larp as consistently positive: 6/6. He still benefited fully from it (6/6), describing it this way: "I already jumped over my shadow when I got there, because I preferred to step back. I didn't prepare myself and was still perceived as very positive."

2.8.4 Mia

Table 19: Screening results from Mia at t_2

Screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
score	63*	20*	67*	11*	4

Screening results from Mia at t_2 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 20: SASKO subscales from Mia at t_2

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	13	14*	9	11*

Results of the four subscales of SASKO from Mia at t_2 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

In the PSS-K, Mia's responses at t_2 indicated a possible personality disorder of the dependent, histrionic, paranoid, schizotypal, or obsessive-compulsive type. In the OSVe-S, Mia had now a sum score of 4, in contrast to t_0 (7= abusive use). In her evaluation form, Mia stated about her therapy goals that she was able to continue her goals to the following extent: Goal 1: 4/6. In everyday life, she was not at all aware of her larp character's behavior: 1/6. She remembered the larp as consistently positive: 6/6. She still benefited quite a bit from it (5/6) and described it this way: "I find that the larp role-play showed me that you also somehow get to the end when you give up control, even if maybe more slowly or through detours. In general, it affected me positively and it was really a lot of fun because in the end it was 'just' a game. I would definitely do it again. The fresh air half the day also did me good and the atmosphere in the forest." She later added verbally that she had felt positively exhausted and "worn out" as she very rarely does otherwise.

2.8.5 Quinn

Table 21: Screening results from Quinn at t_2

Screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
score	65*	17*	72*	11*	8*

Screening results from Quinn at t_2 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 22: SASKO subscales from Quinn at t_2

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	18*	13*	8	11*

Results of the four subscales of SASKO from Quinn at t_2 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

In the PSS-K, Quinn's responses at t_2 indicated a possible personality disorder of the dependent, histrionic, paranoid, schizoid, or schizotypal type. In the OSVe-S, Quinn had a sum score of 8, so it was now above the cutoff, in contrast t_0 (5). In her evaluation form, Quinn stated about her therapy goals that she was able to continue her goals to the following extent: Goal 1: 4/6, Goal 2: 3/6. In everyday life, she was not aware of her larp character's behavior at all: 1/6. She recalled the larp as mostly positive: 5/6. She barely benefited from it (2/6) and described it this way: "Through the larp, I was able to jump over my shadow for a small period of time and step into the role I had set out to play. Therefore, my first experience and impressions of the larp are very positive."

2.8.6 Emma

Table 23: Screening results from Emma at t_2

Screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
score	51	10*	52	1	2.5

Screening results from Emma at t_2 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 24: SASKO subscales from Emma at t_2

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	10	9	3	8

Results of the four subscales of SASKO from Emma at t_2 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

Emma's BDI-II score indicated mild depression, in contrast to minimal depression at t_0 (8). In her evaluation form, Emma stated about her therapy goals that she was able to continue her goals to the following extent: Goal 1: 5/6, Goal 2: 2/6. In everyday life, she was hardly aware of her larp behavior: 2/6. She remembered the larp as all-around positive: 6/6. She still benefited quite a bit from it (4/6), describing it as, "I am more aware of my goals. In everyday life, I notice more when I'm not behaving according to my goals."

2.9 t_3 : Three Months Posttreatment

Three months after the larp, the participants received the same questionnaires again by mail. All participants filled them out and then returned them by mail as well. The results are shown again below. In addition, the participants' progressions are shown from t_0 to t_3 with regard to the most important parameters from the questionnaires.

2.9.1 Riley

Table 25: Screening results from Riley at t_3

Screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
score	73*	13*	58	11*	4.5

Screening results from Riley at t_3 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 26: SASKO subscales from Riley at t_3

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	23*	25*	9	8

Results of the four subscales of SASKO from Riley at t_3 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

Riley's BDI-II score at t_3 indicated minimal depression (13 points), in contrast to a moderate depression at t_0 (25) and t_2 (22). Her $T(GSI)=58$ on the BSI was now in an average range, in contrast to scores above the cutoff at t_0 (72) and t_2 (61). On the PSS-K, Riley's responses at t_3 yielded evidence of a possible dependent, histrionic, paranoid, or schizotypal type personality disorder. In the SASKO a change had taken place in the subscales: In contrast to the two previous measurement points, the subscales indicating a social competence deficit --interaction deficits and information processing deficits -- no longer showed elevated values above the cutoff. In her evaluation form, Riley stated about her therapy goals that she was able to continue her goals to the following extent: Goal 1: 3/6, Goal 2: 4/6, Goal 3: 3/6. In everyday life, she was barely aware of her larp character's behavior: 2/6. She recalled the larp as mostly positive: 5/6. She still benefited moderately from it (3/6), describing it as, "I hope it's from the larp, but I'm starting to feel more confident again. The larp was very interesting and fun.

2.9.2 Robin

Table 27: Screening results from Robin at t_3

screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
score	72*	15*	66*	7*	4.5

Screening results from Robin at t_3 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 28: SASKO subscales from Robin at t_3

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	23*	17*	10*	13*

Results of the four subscales of SASKO from Robin at t_3 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

In the PSS-K, Robin's responses at t_3 gave evidence of a possible schizotypal-type personality disorder. In her evaluation form, Robin stated about their therapy goals that they were able to continue their goals to the following extent: Goal 1: 5/6, Goal 2: 4/6, Goal 3: 5/6. In everyday life, they sometimes made themselves aware of the behavior of their larp character: 3/6. They remembered the larp as consistently positive: 6/6. They also still benefited from it (4/6) and described this as follows: "Now and then I try to think of my character from the larp and act like it, but it doesn't always work out. Due to the fact that the larp unfortunately only took place once, I forget about the goals and my character more and more often or don't think about it as often. If this would take place more often, on regular dates, it would definitely stay in my head better and I am sure that it could help me really well. The goals would be much more present in my mind."

2.9.3 Liam

Table 29: Screening results from Liam at t_3

screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
score	63*	25*	72*	11*	8.5*

Screening results from Liam at t_3 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 30: SASKO subscales from Liam at t_3

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	14	12	13*	9*

Results of the four subscales of SASKO from Liam at t_3 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

Liam's BDI-II score at t_3 indicated moderately severe depression. That indicated more depression than at t_0 (16) and t_2 (9). In the PSS-K, Liam's responses at t_3 indicated a possible borderline, histrionic, schizoid, or obsessive-compulsive type personality disorder. A change

had taken place in the subscales of the SASKO: In contrast to the two previous measurement time points, the *fear of rejection* subscale no longer showed an elevated value above the cutoff. This would fit Liam's statement in the evaluation form at t_2 (he had been perceived as positive without preparation at the larp). In his evaluation form, Liam stated about his therapy goals that he was able to continue his goals to the following extent: Goal 1: 2/6. In everyday life, he was hardly aware of his larp character's behavior: 2/6. He remembered the larp as consistently positive: 6/6. He hardly benefited from it anymore (2/6) and described this as, "I remember the larp as positive, but it has nothing to do with my current state. For an effect, maybe a repeat would be helpful."

2.9.4 Mia

Table 31: Screening results from Mia at t_3

screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
score	59	15*	68*	8*	2

Screening results from Mia at t_3 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 32: SASKO subscales from Mia at t_3

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	13	11	9	8

Results of the four subscales of SASKO from Mia at t_3 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

Mia's BDI-II score indicated at t_3 a mild depression and was thus lower than at the previous measurement time points (t_0 : 20 and t_2 : 20), where moderate depression was still assumed. In the PSS-K, Mia's responses gave evidence of a possible personality disorder of the histrionic or obsessive-compulsive type. In the SASKO Mia's load regarding social anxiety and subjective social competence deficits was within the normal range for the first time in the course of the study. All four subscales were now also below the clinical cutoff. At the previous measurement time point, this was true for only two of the subscales.

In her evaluation form, Mia stated about her therapy goals that she was able to continue her goals to the following extent: Goal 1: 4/6. In everyday life, she was not at all aware of her larp character's behavior: 1/6. She remembered the larp as consistently positive: 6/6. She no longer benefited from it (1/6) and described it this way: "Unfortunately, I don't think about it in everyday life anymore, but when I think back on it, joy comes."

2.9.5 Quinn

Table 33: Screening results from Quinn at t_3

screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
score	78*	16*	80*	10*	7*

Screening results from Quinn at t_3 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 34: SASKO subscales from Quinn at t_3

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	27*	18*	15*	17*

Results of the four subscales of SASKO from Quinn at t_3 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

Quinn had the result $T(GSI)=80$ in the *BSI* at t_3 . This indicated an extremely above-average psychological stress, which was again above the previous values. The SASKO was also now strongly above average ($T=78$) and previously at t_0 and t_2 only slightly above average. In the PSS-K, Quinn's responses indicated a possible personality disorder of the dependent, histrionic, paranoid, or obsessive-compulsive type. In her evaluation form, Quinn stated about her therapy goals that she was able to continue her goals to the following extent: Goal 1: 3/6, goal 2: 2/6. In everyday life, she was hardly aware of the behavior of her larp character: 2/6. She remembered the larp as predominantly positive: 5/6. she hardly benefited from it (2/6) and described this as follows: "I think the larp is in itself a super thing to escape from one's everyday life for a considerable time. Personally, I find it very difficult to bring the goals that you have pursued in the larp into reality and your everyday life. I think if you do larp more often, it could possibly be more effective."

2.9.6 Emma

Table 35: Screening results from Emma at t_3

screening	SASKO	BDI-II	BSI	PSS-K	OSVe-S
score	61*	10	59	1	1

Screening results from Emma at t_3 . Sum scores or t-values are reported according to the respective manual. *means: above average value.

Table 36: SASKO subscales from Emma at t_3

SASKO subscale	Talk	Reject.	Interac.	Informat.
score (raw)	11	15*	9	9*

Results of the four subscales of SASKO from Emma at t_3 : Fear of talking and being the focus of attention, fear of rejection, interaction deficits, and information-processing deficits. According to the manual, the raw scores are compared with a cutoff. *means: \geq cutoff.

Emma scored $T(SASKO)=61$ at t_3 . Thus, for the first time, the stress regarding social anxiety and subjective social competence deficits was slightly above average. In her evaluation form, Emma stated about her therapy goals that she was able to continue her goals to the following extent: Goal 1: 2/6, Goal 2: 4/6. In everyday life, she was not aware of her larp behavior at all: 1/6. She recalled the larp as consistently positive: 6/6. She still benefited greatly from the larp (5/6) and described it this way: "Since the larp, I notice more the situations in everyday life where I am perfectionistic or do not set limits. All in all, I've gotten better at setting boundaries and completing tasks only satisfactorily and not perfectly."

2.10 Difficulties in the Course of Larp Therapy

The first difficulties already arose in the time between the preliminary interview and the larp. Liam and Quinn were no longer sure at this time whether they still wanted to participate. In particular, they stated that they could not sufficiently imagine how the larp would actually proceed. In both cases, the therapist provided more information about this. Liam recognized that his inhibition to participate might be a form of his avoidance behavior and that participation might be therapeutic for that reason as well. He was then motivated to participate again.

Riley and Robin were having difficulty with independent daily structure at the time of larp. Therefore, they were picked up at home by two co-therapists.

One complicating factor on site was the temperatures: it was very hot on the day of the larp, so physical activity was challenging for some of the participants, especially for those who are otherwise not very active in sports. Also, Riley's costume -- a full-body unicorn costume -- made physical activity difficult in the heat. Participants were therefore provided with mineral water by co-therapists during the game.

For all participants it seemed difficult at first to find their way into their own role. With the exception of Emma, who was the only one who already had experience with recreational larp. Robin and Riley in particular found it difficult to act out their rather "offensive" behavioral goals in their role in the game, i.e., clearly standing up for their interests and claiming their rights. The therapist therefore motivated them in between to persevere in this regard. Mia, on the other hand, had the goal of intervening less. The therapist also gave her a tip for this in the game, so that she could implement this better.

In the debriefing of the larp, handouts were distributed on which the everyday transfer of the trained content was explained again and possible side effects were pointed out (e.g., the so-called "post larp depression" in the community, Bowman and Torner 2014). Two participants also took advantage of this, but no one reported any stressful symptoms as a result of the larp.

From the point of view of the therapist and the co-therapists, no complications arose during the implementation. However, the preparation required a very large time commitment.

3. SUMMARY OF THE RESULTS

The results of this case study first show that the therapeutic larp method was perceived as consistently positive by the participants. However, the influence in terms of clinical screening tools varied widely among participants.

First, the participants' assessment of the extent to which they achieved their behavioral goals seems particularly important. Immediately after the larp, all participants indicated that they had achieved at least some of their goals.

In the course of the case study, however, the participants differed greatly in whether they were able to maintain their goals. Riley experienced an upward trend (see Fig. 1), Liam and Quinn experienced a downward trend, Mia experienced a slight downward trend that stagnated, and Emma's goal achievement seemed to develop unsystematically.

Several participants had indicated that a repetition of the larp would have been helpful in consolidating the learned behaviors. This could explain why consolidation of goal achievement did not occur for all participants. A positive reminder of the larp was not enough to maintain goals as well. However, it seemed helpful if participants still felt they benefited from the larp even at t_3 : this was true for Robin and Emma. And both had positive development, at least in subgoals.

In the case of Riley, there is also an important observation: she was even able to consolidate her goal achievement over time (Fig. 1); at the same time, symptom relief took place on several scales. This may indicate that she succeeded in transferring the behavioral goals from the larp to everyday life, whereby the intended therapeutic effect was reflected in specific symptom areas. It is noteworthy here that Riley was initially very dissatisfied with her goal achievement, but then seemed to benefit greatly from the larp in the long run (and was able to implement her goals in everyday life, as mentioned). A theoretical explanation could be provided by the research of Leménager et al. (2020): Perhaps the larp leads to participants being confronted with the fact that they are not yet as good at certain behaviors as they thought and are then motivated to work on themselves.

It was assumed that social anxiety and social competence deficits in particular would improve as a result of the larp. This was tested with the SASKO. A decrease of values in the SASKO was observed for Riley, Liam and especially Mia (see Fig. 2). Supplementary, the results of the scale *Uncertainty in Social Contact* from the BSI can be considered. Here, too, these three participants show an improvement compared to the first measurement (see Fig. 3).

Riley and Mia also showed the most remarkable reduction in Internet use between t_0 and t_3 , as measured by the OSVe-S (see Fig. 4).

However, Riley, Liam, and Mia indicated in the qualitative follow-up interview that they rarely thought about the larp anymore. Thus, the reduction in psychological distress in the aforementioned screenings is likely to be due to other, external effect factors as well.

With respect to the BDI-II, Riley, Mia, and Robin experienced a decrease in their depressive symptoms (see Fig. 5).

Quinn was the only one to experience a strong increase on several scales. It seems plausible that this is because Quinn was the only one not in therapy at the time of the case series. One might conclude that for significant improvement to occur after therapeutic larp, regular psychotherapy should occur in parallel. The possible additive effect still needs further research.

Summarizing the processes, it can be concluded that the therapeutic larp had positive impact for the participants in the short term. In the qualitative questionnaires, it was characterized as a clearly euthymic experience and the participants were predominantly satisfied with their goal achievement. This could be reflected accordingly in the clinical questionnaires in the follow-up measurement only two weeks later. At the second follow-up after three months, however, the influence of the larp is then apparently no longer so clearly present. On the contrary, it must be noted that several participants had increasing stress values in their screenings. No meaningful causal conclusions can be drawn from the data collected as to why these negative trends can be seen and whether they have anything to do with the larp.

4. DISCUSSION AND RECOMMENDATIONS FOR PRACTICAL IMPLEMENTATION

The present case study has shown that a CBT-oriented larp seems to be suitable in principle as a medium for working with mentally ill people. Therapeutic objectives could be sensibly formulated for the game. The participants were able to prepare themselves well for the game within the framework of a standardized preliminary discussion and were able to try out their target behavior in their roles mostly successfully.

Based on the qualitative data, it was shown that the participants would have liked the larp to be repeated above all else in order to solidify their learning goals. Thus, in the future, the therapeutic larp should best be understood as a training that is repeated over and over again, as is also common in established social skills training.

However, as has been shown, even a one-time implementation resulted in positive experiences for the participants, even after several months. A possible explanation could be that the experience of participating in a larp for the first time had a general effect. Namely, the motivation to engage in novel situations and behaviours, thereby exposing oneself to corrective and psychologically healing experiences. This can have a positive effect on overall mental health. This would also correspond to the personal message that one participant sent to the team of therapists about a year after the larp: she had gained a fundamentally more positive attitude towards life as a result of the larp, and she had her PC printed on a T-shirt to remind herself of it.

For the practice, however, there is the difficulty of economic efficiency here, because the effort of a larp is relatively large and ties up a lot of therapeutic personnel. The format we have chosen (length: one afternoon, forest setting, 4 to 5 therapists) otherwise seems appropriate and sensible in our experience. The number of participants should not exceed 6 in this setting. Our experience as therapists in the larp was that particularly close supervision of the participants during the larp is essential so that they can implement their new behavior.

It also seems important to us that the preparatory and follow-up interviews are conducted very carefully, which is in line with Diakolambrianou (2020), for example. It is probably optimal if psychotherapy runs concomitantly, in which the experiences from the larp can be taken up. This could also explain why Quinn deteriorated in contrast to the other participants.

In conclusion, the results of the study suggest that a CBT-oriented larp can be well implemented as a therapeutic tool to train behavioural goals affecting the symptom domains of anxiety and depression, but this statement relates primarily to qualitative data and practical feasibility. However, no clear, stable effect on symptom reduction (in the sense of screening) can yet be observed from the data. One could draw a benevolent conclusion: At time t_2 we might see a positive influence of the larp (in combination with the qualitative data), at time t_3 no effect at all. Further research is needed here.

In qualitative statements by Mia (t_2) it was emphasised that the physical activation through larp made a positive contribution. This seems to be plausible, because physical activation is an effective intervention, especially for depressive disorders (Ledochowski et al. 2017). But especially walking in the forest as a setting had positive influence in the subjective perception (Mia at t_2). It has been empirically shown that spending time in the forest helps to increase psychological well-being (for an overview see Schuh and Immich 2022, 61-88). Psychotherapeutic interventions, summarised under the term “forest therapy,” use the forest as a setting for established treatment components. Particularly noteworthy for a therapeutic larp is a comparative study by Kim et al. (2009), who found that depression patients who regularly received CBT in the forest had significantly better therapy outcomes than patients in hospital. Especially when physically activated outdoors, therapeutic interventions seem to work better, such as in the *walk and talk* approach (Revell and McLeod 2016). From the point of view of the literature, the setting “in the forest” and “in motion” seems to be an additive factor for therapeutic success, but there must still be a targeted therapeutic method as a basis (i.e., the forest alone does not heal). This connection also seems plausible for therapeutic larp. Furthermore, in practical terms, the difference between the outdoor setting and the classical therapy in the therapy office is that new opportunities to solve problems can be directly experienced physically (instead of just talking about them) and that a generalisation of learned skills can take place more easily than if they are only learned in a single setting.

In the present study, participants could develop and train up to three behavioral goals. In retrospect, it seems absolutely sufficient to develop a single behavioral goal in the preliminary interview.

The assumption that personality accentuation reduces the effectiveness of larps could not be confirmed.

In conclusion, the author of this study proposes to introduce a new term to distinguish this particular form of larp from recreational larp (similar to Geneuss 2019, 282): My suggestion is to use the term *T-Larp* for any kind of live-action role-playing that has a therapeutic claim.

5. REFLECTION, LIMITATIONS, AND FURTHER RESEARCH

The present study broke new scientific ground and showed the feasibility of therapeutic larp as a method on the basis of individual cases, especially when a high degree of structuring, preparation, and follow-up takes place.

A significant limitation is the simple study design. The present study was initially only a small case series in pre-post-follow-up design. There was no comparison with a control group (for example, persons without therapy and persons with normal CBT). This means that confounding with external factors is not clear enough in the effects measured by questionnaires in this study. It is also possible that the participants’ continued treatment, if any, simply led to an improvement in their symptoms. It seems essential to conduct further quantitative research with more participants and in the form of RCT in the future to investigate the effectiveness of therapeutic larp (see Varette et al. 2022).

In this study, the first data collection (t_0) took place after the preparatory talk. This may have already influenced the screening. Also, the data collected in the group could be biased by the group situation (and participants’ shame or fear). Furthermore, in a follow-up study, the mental health data should be better validated, e.g., through doctors’ notes. The only data sources used in this study were 1) written self-reports and 2) the investigator’s assessment at first contact.

In this article, the role of the therapist (= GM) in therapeutic larp was also not examined in detail with regard to the effect of the larp. Since the therapeutic relationship is always an important effective factor in therapies, this must be specifically investigated in future research.

Finally, for future research, it would also be appropriate if the performing therapists were not also the authors of the study to avoid confirmation bias.

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APPENDIX I: FIGURES

Figure 1: Riley's goal achievement. Goal achievement on a 6-point Likert scale. Minimum score on the scale: 1, maximum score: 6.

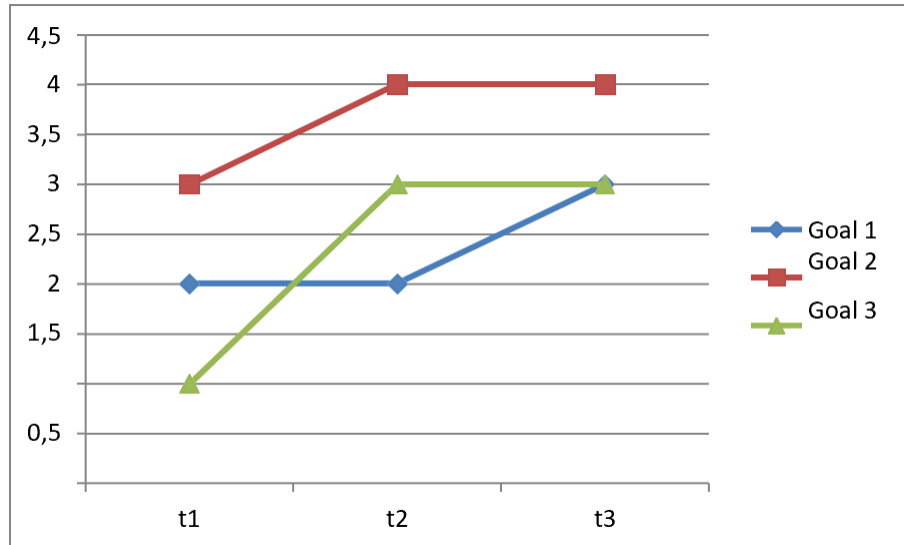


Figure 2: Course of the SASKO. History of the SASKO t-score (sum score for each participant). Scores (T values) between 40 and 60 are considered average.

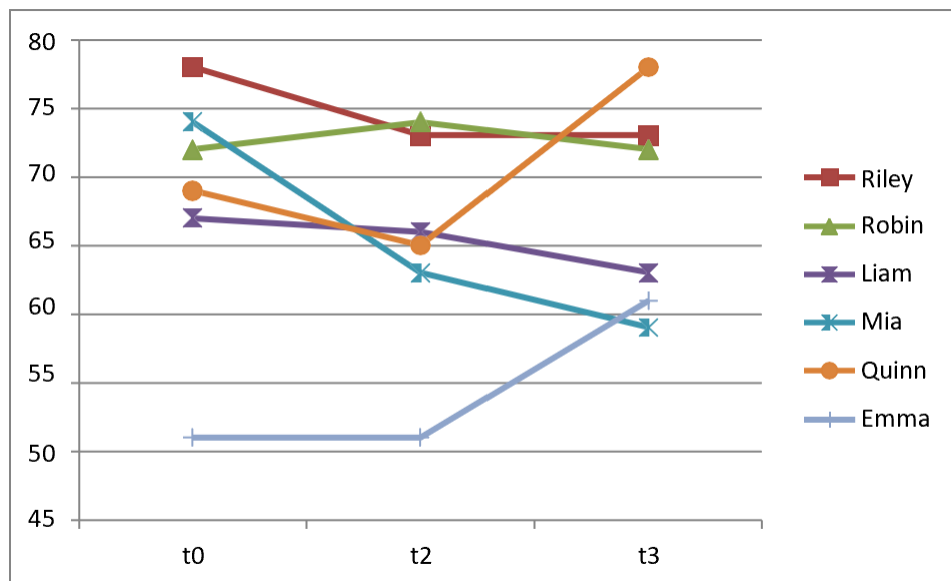


Figure 3: Course of the BSI scale Uncertainty in Social Contact. Sum score on the Uncertainty in Social Contact subscale of BSI, for each participant.

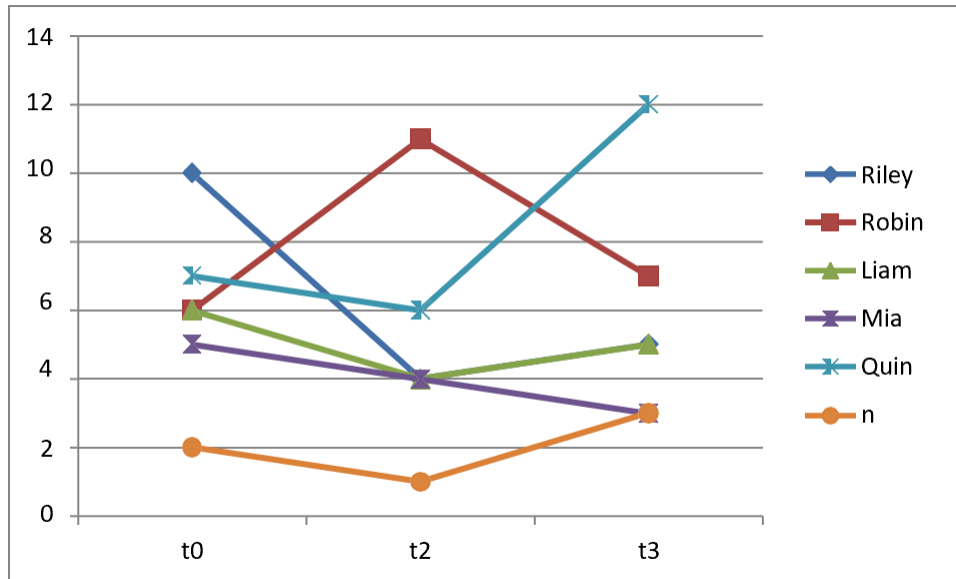


Figure 4: Course of Internet dependence measured in the OSVe-S. Sum score of each participant; a value of 7-13 means abuse, a value above 13 means dependency.

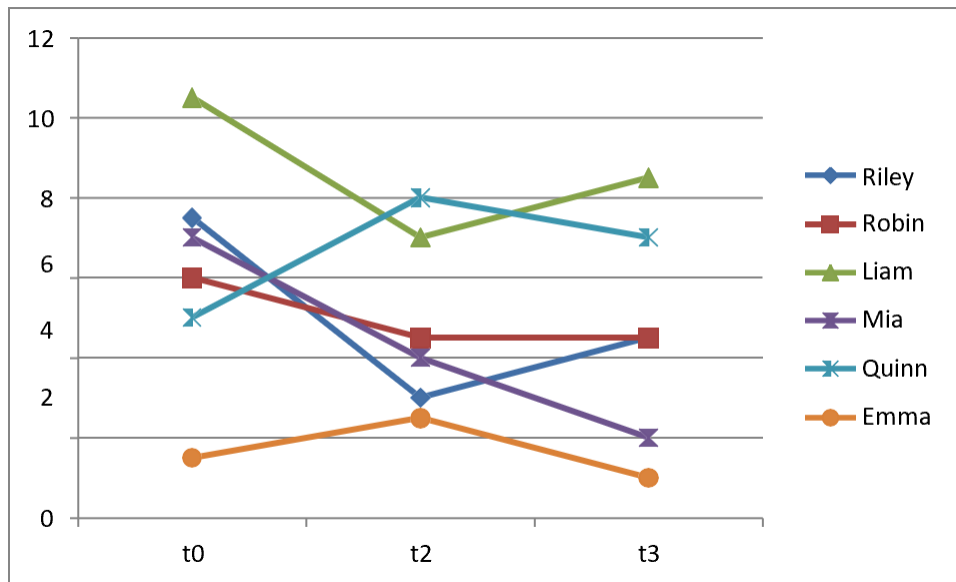
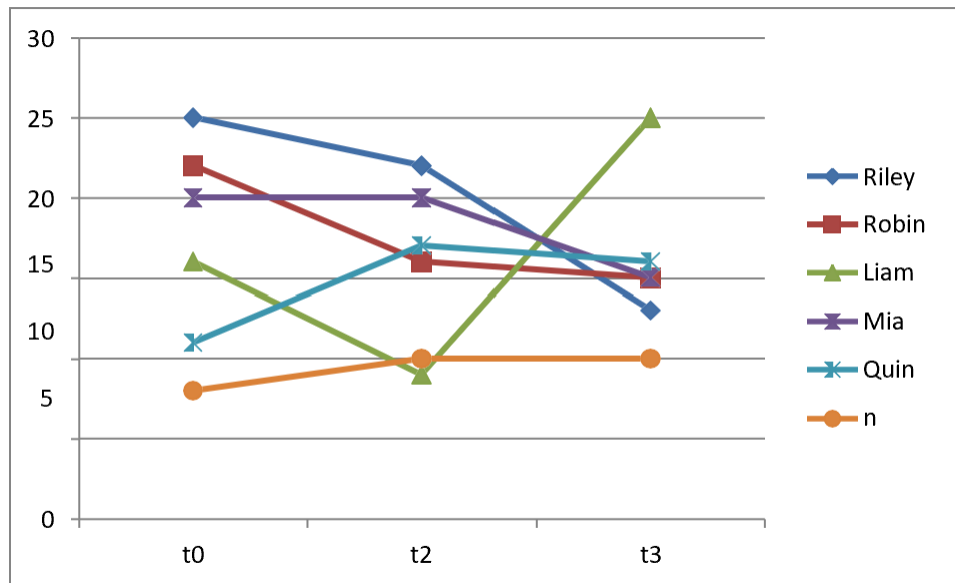


Figure 5: Course of the BDI-II. Sum score of the BDI-II of each participant. 9-13: minimal depression, 14-19: mild depression, 20: moderate depression, 29 and above: severe depression. Maximum: 63.



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