

Predicting Attrition and Engagement in the Treatment of Young Offenders

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Abstract

Premature treatment termination in offender treatment is linked to negative consequences for clients, practitioners, and the criminal justice system. Therefore, identifying predictors of treatment attrition is a crucial issue in offender rehabilitation. Most studies on this topic focus on adult offenders; less is known about adolescent offenders. In our study, therapy attrition and engagement were predicted via logistic and linear regression to examine the link between pretreatment variables, engagement, and treatment failure in 161 young offenders treated in a social-therapeutic unit in Germany. Engagement could be predicted by motivation, disruptive childhood behavior, low aggressiveness, and higher age. In turn, low motivation, substance abuse, and young age predicted attrition, but their impact diminished when engagement was added to the model with only substance abuse remaining significant. The effect of substance abuse on attrition disappeared, when the offender's initial motivation was high. Implications for assessment and treatment planning are discussed.

Keywords

offender treatment, young offenders, social-therapeutic treatment, treatment attrition, dropout, engagement, motivation

Introduction

There is widespread agreement that offender treatment has made substantial progress (e.g., Cullen, 2013; Lösel, 2012). Intervention concepts that adhere to the risk-need-responsivity

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(RNR) model (Bonta & Andrews, 2017) have demonstrated desirable effects. There are also sound extensions of the RNR model to staff, context, and other features (Andrews, Bonta, & Wormith, 2011), although some of these issues need more replication (Lösel, 2017). Various influences may contribute to variation in outcomes, and treatment dropout is an important one of these. Premature treatment termination is consistently linked to negative consequences. For instance, studies showed higher recidivism rates for treatment noncompleters than for completers (e.g., Edwards et al., 2005; Loeb, Waung, & Sheeran, 2015; Olver, Stockdale, & Wormith, 2011; Seabloom, Seabloom, Seabloom, Barron, & Hendrickson, 2003; Wormith & Olver, 2002). It has also repeatedly been found that non-completers are even more likely to reoffend than untreated controls (Hanson & Bussière, 1998; McMurrin & Theodosi, 2007; Olver & Wong, 2009). The meta-analysis by Olver et al. (2011) showed that attrition in offender rehabilitation programs is a frequent problem. The respective rates range from 20% for prison-based treatment of adults to about 60% for inpatient juvenile offender treatment. Offenders dropping out from treatment are not only at an elevated risk of reoffending, but may also lose motivation for any behavioral change or become stigmatized in the criminal justice system (Olver et al., 2011).

Dropout has different reasons, for example, lack of motivation, noncompliance, misbehavior, relocation to another institution, or getting employment in the community. In addition to these individual factors, premature treatment termination may also be an indicator of problems in program implementation and quality assurance (Beyko & Wong, 2005; Koehler, Lösel, Akoensi, & Humphreys, 2013). This can have a negative impact on staff motivation and prison climate (Howells & Day, 2007). Last but not least, treatment dropout must also be viewed from a financial perspective of proper investment in the criminal justice system.

For these and other reasons, it is highly important to avoid the dropout of offenders from rehabilitation programs. Accordingly, many programs contain eligibility criteria to target the most suitable clients and avoid dropout, but in routine practice such criteria are not always fully met (Maguire, Grubin, Lösel, & Raynor, 2010). To keep dropout as low as possible it is essential to determine relevant predictors of attrition to identify clients with a high risk of dropout, to adapt therapeutic programs, and to develop strategies to reduce premature treatment termination in a long-term perspective (Steketee, 1992).

There are various studies on this topic, but most of them focus on adult offenders (Olver et al., 2011). Less is known about treatment attrition in adolescent offenders, although predictors of dropout are likely to differ from those found for adults. Juveniles are usually more reliant on their family for guidance and support than adults; therefore, parental issues such as divorce, psychiatric disorders, or interfamilial violence may be relevant risk factors in adolescents but not in adult offenders (Loeb et al., 2015). Also, less maturity that is visible in youth-related substance abuse or other disruptive behavior may be linked to problematic behavior in the therapeutic setting and interfere with treatment completion. As adolescents have the highest attrition rates within the field of offender rehabilitation (Olver et al., 2011), it is particularly important to investigate dropout risks in this population. Research revealed various risk factors predicting treatment attrition in young offenders, but the findings are

heterogeneous. In some studies, younger age increased the risk of dropout (Kraemer, Salisbury, & Spielman, 1998; Lueger & Cadman, 1982), and in other studies age had no impact on attrition (Edwards et al., 2005; Konecky, Cellucci, & Mochrie, 2016; Loeb et al., 2015; Seabloom et al., 2003). Loeb et al. (2015) identified several familial factors associated with treatment attrition, such as maternal mental health problems or frequent moves of housing during childhood, whereas Konecky et al. (2016) did not find any effect of familial risk on treatment completion. Similar to adult offenders, static risk factors like a history of antisocial behavior and the number of prior arrests were consistently associated with treatment attrition in juvenile offenders (Konecky et al., 2016; Loeb et al., 2015; Nowakowski & Mattern, 2014). Dynamic risk factors were also found to be relevant, for example, ongoing violent behavior, sexual maladjustment, or antisocial orientation (Edwards et al., 2005; Hunter & Figueredo, 1999; Konecky et al., 2016). In addition, juveniles dropping out from treatment had more school problems than completers; they showed, for example, more truancy and bullying or lower academic performance (Edwards et al., 2005; Loeb et al., 2015; Nowakowski & Mattern, 2014). Only a few studies examined the link between personality factors and treatment attrition. Neuroticism (Lueger & Cadman, 1982) and poor self-regulation skills (Edwards et al., 2005; Kraemer et al., 1998) were found to differ between completers and noncompleters. In contrast, Konecky et al. (2016) did not find any differences in personality characteristics.

Obviously, there is both consistency and heterogeneity in findings due to different treatment settings and offender populations. In their meta-analysis, Olver et al. (2011) found higher attrition rates for community-based than for institutional treatment and higher rates for sexual or violent offender treatment than for general correctional programs. Therefore, one should be cautious in generalizing findings too much across settings and offender types. Beyond the general finding that dropouts have an enhanced risk of reoffending, a differentiated view should provide information about factors that can be addressed in programs to reduce attrition.

There is, for instance, little evidence about the impact of engagement on attrition in young offenders. Low engagement can be defined in terms of poor attendance of sessions, low cooperation, or poor-quality contributions within therapy (Howells & Day, 2007). In the most serious form it culminates in treatment failure. In their integral model of treatment motivation, Drieschner and Verschuur (2010) postulate that engagement is directly influenced by motivation, that, in turn, depends on internal and external determinants, such as distress, problem recognition, social support, personality, or age. The authors suggest that treatment engagement (e.g., active participation, disclosure, accepting rules, and restrictions) may provoke aversive feelings in clients, so that a minimum of motivation is required to overcome these obstacles and to achieve sustained success. In line with these theoretical assumptions, a review by Holdsworth, Bowen, Brown, and Howat (2014) demonstrated that motivation was positively associated with most indicators of treatment engagement (i.e., participation, counselor rapport, treatment satisfaction, and peer support).

Howells and Day (2007) argue that the reasons for low engagement are not only located within the person of the offender, but may result from situational or program

factors (see also the contributions in McMurran, 2002a). If the program is not adjusted to the offender's learning style, cognitive capacity, or personal needs, even well-motivated offenders might feel overstrained, misplaced, or bored and consequently refuse to engage in the program. Therefore, investigating the link between individual disposition, motivation, and engagement could provide important information for program planning and implementation, in particular because there is few evidence on motivation and engagement in juvenile offenders.

Against this background, our present study investigates predictors of dropout and treatment engagement within a sample of incarcerated young offenders in a social-therapeutic unit (STU) in Germany. As our sample consists of young violent and sexual offenders, special emphasis is placed on risk factors that are particularly relevant in these offender groups and that have been linked to premature treatment termination in research, that is, young age, unemployment, familial problems, misuse of alcohol or drugs, and a history of antisocial behavior in childhood and youth. In addition, we address not only the impact of motivation on treatment attrition and engagement but also its potentially buffering effect on static risk factors such as criminal history or substance abuse. We hypothesize that high motivation could reduce the negative effect of static risk factors on attrition and prevent even high-risk offenders from terminating treatment prematurely.

As most research on offender treatment stems from North America and Great Britain, our study can provide additional information on the generalizability of findings across countries or cultures (e.g., Koehler et al., 2013; Lösel, 2017). In contrast to most of the treatment research on somewhat isolated manualized programs, our study also widens the view to dropout in a complex treatment approach that is similar to therapeutic communities (TCs) in other countries (Lösel, 2012). Our data were taken from a larger evaluation study examining the effects of social-therapeutic treatment. In the present article, we compare completers and noncompleters with regard to pretreatment differences and within-treatment behavior. Information on such data is particularly relevant for a process-oriented view of "up and down" processes in participants' motivation and change (Prochaska & Levesque, 2002).

Method

Sample

The sample consisted of all 161 young male offenders who entered the STUs of the prison for juveniles at Neuburg-Herrenwörth (Bavaria, Germany) between 2005 and 2013. It should be noted that prisons for juveniles in Germany do not only have adolescent inmates, but due to the penal law regulations they contain many young adults (above age 18; "Heranwachsende"). They are responsible for all offenders sentenced according to the youth criminal law which can be applied for adolescents and young adults up to age 20 at time of the index offense. At admission, the youngsters were between 15 and 21 years old ($M = 18.80$, $SD = 1.19$). The majority were German (73.3%), 13.7% had Turkish nationality and 8.8% came from Eastern Europe. The

average length of the current sentence was 2.84 years ($SD = 0.88$) and ranged from 1 year to 7 years. The young offenders were either treated in a STU for sexual offenders (43.5%) or for violent offenders (56.5%), depending on their principle offense. However, the majority of the juveniles in the sexual offender unit had also committed nonsexual violent offenses (60%) and in the violent offender group some juveniles had also committed sexual offenses (5.5%). On average, the juveniles had been convicted 2.86 times for a violent and/or sexual offense ($SD = 1.53$) and 2.06 times for other offenses ($SD = 1.82$). The mean length of the social-therapeutic treatment was 13.58 months ($SD = 5.87$) and ranged from 1 to 37 months.

Setting and Treatment

The prison of Neuburg-Herrenwörth is designed for young male offenders and provides two separate STUs, one for sexual and one for violent offenders. The social-therapeutic program that has a planned duration of 12 to 24 months combines psychotherapeutic, pedagogical, and educational elements and aims to reduce risk factors for recidivism such as antisocial attitudes, impulsivity, emotional distress, lack of responsibility, or low self-efficacy (see Bandura, 1997). It should also promote strengths and protective mechanisms for behavioral change. The treatment is based on the RNR principles by Bonta and Andrews (2017) and, therefore, targets criminal needs linked to recidivism, and aspects of responsivity, for example, motivation for change. The treatment is not directed at mental health problems such as major depression, anxiety, or somatic complaints. Subclinical symptoms or acute crises can be addressed in the regular individual treatment sessions, but the STU offers no long-term psychiatric treatment. If mental health problems are predominant, the adolescents are referred to specialized institutions. German social-therapeutic prisons were originally designed for serious adult repeat offenders, but recently new institutions were established for young offenders as well. Social-therapeutic prisons in Germany (e.g., Lösel & Egg, 1997) are partially similar to TCs in England and North America (e.g., Lipton, 2010), but they are more hierarchically structured and prison-like than traditional TCs (e.g., Shuker & Sullivan, 2010). They aim for an overall therapeutic climate and provide a broad range of treatment services. Insofar, STUs represent a broader systems-oriented approach that goes beyond the implementation of isolated offending behavior programs. The treatment contains individual and group sessions (including structured cognitive-behavioral programs) and is accompanied by regular work, vocational courses, basic and further education, sports and arts activities. Compared with other prisons, inmates of STUs usually have more privileges and less restrictive rules. For example, there is more contact among the prisoners and less regulation over the weekend. Particularly important is the process of stepwise “opening” that includes more leaves, working outside in the last phase of incarceration, and an early release. Social-therapeutic treatment in Bavaria is legally mandated for sexual offenders with at least 2 years of prison sentence length and recommended for violent offenders with a particular risk of reoffending. The STU program is not suitable for adolescents with a

predominant substance-related or psychiatric disorder or an intellectual disability, and requires a minimum of motivation to enter treatment and acceptance of responsibility for the offense. Admission decisions are made on a case-by-case basis; there are no strict cutoff scores regarding criminal risk or motivation.

Measures and Data Collection

For the present analyses, we extracted information from the extensive STU files retrospectively. These files contained demographic and biographical data, the detailed sentences on the index offense, on earlier convictions, and the official criminal record. They also contained the results of psychological test assessments, structured summaries of diagnostic interviews led by social workers and psychologists, as well as reports on the youth's treatment-related behaviors and their conduct in the vocational and educational context. The file information was coded by trained members of the research group according to a structured coding manual. Interrater reliability was checked on a subsample of 20 cases that had each been independently coded by two raters. Intraclass correlation coefficients (one-way model for single measure; $ICC_{1,1}$) were calculated for ratings and continuous variables and Cohen's Kappa for nominal variables. For most variables, these showed excellent interrater agreement (see Table 1).

For the purpose of this study, we extracted demographic data (age, migration status, employment status prior to incarceration), information on antisocial history (disruptive behavior in childhood, substance abuse, number of convictions), therapeutic experiences before the current incarceration and prevalence of familial risk. A familial risk score was calculated by summing up the presence of 11 risk factors, namely family violence, delinquency of a family member, physical illness, mental illness, substance abuse in the family, low socioeconomic status, parents' divorce, death of a parent or another meaningful relative, problems linked to social integration (for immigrants), and experience of physical or sexual abuse. Intensity of substance abuse was coded on a 6-point scale from *no substance or alcohol abuse* (0) to *excessive abuse of alcohol and drugs* (5).

Most of these variables were readily accessible in the files and therefore showed excellent interrater reliability ($ICC/\kappa \geq .80$; see Table 1), the only exception being the existence of earlier therapeutic experiences which showed lower but still fair interrater agreement ($\kappa = .69$).

Risk of Reoffending

The files did not contain scores of a structured risk assessment instrument. We therefore coded the items of the HCR-20 (Webster, Douglas, Eaves, & Hart, 1997) in the German Version by Müller-Isberner, Jöckel, Cabeza, and Gonzales (1998) based on the available file information and used the sum score of the 20 items to account for the initial risk level of treatment participants. In a meta-analysis by Yang, Wong, and Coid (2010), the HCR-20 showed good predictive validity for violent reoffending with a mean effect size of 0.85 and a satisfactory AUC of .71. As we wanted to measure the

Table 1. Range, Mean, and Standard Deviation for Variables Extracted From Prison and Treatment Files.

Variables	Range	M (SD)/%	ICC or κ
Age at admission to the STU	15-21	18.80 (1.19)	1
Migration status		32%	$\kappa = 1$
Unemployment prior to incarceration		29%	$\kappa = .80$
Therapeutic experience prior to incarceration (yes/no)		65%	$\kappa = .69$
Number of familial risk factors	0-8	2.96 (1.64)	.82
Level of disruptive childhood behavior (3-point scale)	0-2	1.23 (0.83)	1
Level of substance abuse (6-point scale)	0-5	2.21 (1.51)	.88
Number of nonviolent/sexual convictions	0-8	2.06 (1.82)	1
Number of violent and/or sexual convictions	0-7	2.86 (1.53)	.99
Initial motivation (4-point scale)	1-4	2.89 (0.91)	.90
HCR score	2-34	21.11 (6.48)	.85
Engagement (5-point scales)			
in individual treatment	1-5	3.36 (0.80)	.73
in group-based treatment	1-5	3.27 (0.89)	.65
in educational/vocational training	1-5	3.19 (0.98)	.73
in the therapeutic community	1-5	3.33 (0.97)	.58
Engagement composite score	1-5	3.28 (0.71)	.79
Psychometric test scores			
Neuroticism (T-Score)	33-71	52.85 (7.52)	
Extraversion (T-Score)	35-72	53.87 (7.50)	
Aggressiveness (T-Score)	27-71	51.91 (9.46)	

Note. Interrater reliability was calculated using the intraclass correlation coefficients (one-way model for single measures) for ratings and continuous variables and Cohen's Kappa for nominal variables as indicated. ICC = intraclass correlation coefficient; STU = social-therapeutic unit; HCR = Historical, Clinical and Risk Management.

initial risk level, the coding did not take into account any information related to the advancement in therapy but was restricted to file information that was available before the treatment at the STU started. Also, coders had to rate the HCR-20 items before they advanced to the coding of treatment engagement (see below).

Initial Treatment Motivation and Treatment Engagement

In the preassessment prior to STU referral, therapists took account of the initial treatment motivation of the offenders. This assessment was not done on an explicit motivation scale, but the files typically contained qualitative descriptions of an offender's readiness to actively participate in treatment. The file information did not allow for a differentiated appraisal of extrinsic versus intrinsic motivation so we rated initial motivation on a single 4-point scale (1 = *clear indication of low degree of treatment*

motivation; 2 = *some indication of but overall questionable treatment motivation*; 3 = *treatment motivation is basically supported in the descriptions but the wording is cautious*; and 4 = *clear positive account of offender's treatment motivation*). The interrater reliability on this item was excellent ($ICC = .90$). After referral to the STU, treatment-related behavior was regularly evaluated by therapists for the different treatment measures the offenders had been attending (individual therapy sessions, group-based treatment, educational and/or vocational training, and integration in the TC). As for the initial treatment motivation, the evaluations were in the form of qualitative descriptions which related to whether the adolescent actively engaged in the respective treatment measure and to what extent he would use the therapeutic input to learn and change. We transferred these descriptions into 5-point rating scales to measure how well the youth engaged themselves in therapy. The ICCs for the individual ratings ranged from .58 to .73. To form an aggregate measure of treatment engagement, we took the mean of the four individual ratings. This combined measure had an ICC of .79. The evaluation and documentation of treatment-related behaviors by the STU staff occurred during treatment and not only after an offender had eventually dropped out of treatment. Also, the coders were instructed to rate engagement regardless of a later dropout to prevent circular reasoning. However, it cannot be fully ruled out that therapists or coders were biased when they had knowledge of whether the participant had completed treatment or not.

Psychometric Tests

Various standardized tests were conducted by the STU staff at the beginning of the treatment. As the diagnostic procedures changed during the observation period, the offenders passed different psychometric tests. To avoid missing data, we combined conceptually similar scales to three indices by calculating a mean T-score. The indices—extraversion, neuroticism and aggressiveness—include scales of the Freiburg Personality Inventory Revised (FPI-R; Fahrenberg, Hampel, & Selg, 2001), the Giessen Personality Test (GT; Beckmann, Brähler, & Richter, 1990), the Inventory of Self-Concept (SKI; von Georgi & Beckmann, 2004), and the Questionnaire for Measuring Factors of Aggression (FAF; Hampel & Selg, 1975).

Results

Therapy Attrition

Of the 161 youth who started treatment, 35 dropped out of treatment prematurely (21.7%). More than two thirds of the dropouts were dispelled from the STU as a consequence of disruptive behavior or violation of prison rules (68.6%). In addition, few adolescents were retransferred to their former prison because of cognitive impairment or mental health problems (11.4%) and 14.3% terminated treatment by own request. Due to the small number of youth, we refrained from analyzing these subgroups separately. Comparing voluntary dropouts ($n = 5$) to nonvoluntary ($n = 30$), we found

only few differences, but this comparison lacks statistical power. All adolescents who prematurely left the STU by own request quitted within the first 7 months; they were all employed prior to incarceration (Fisher's test $p = .03$) and were, by trend, more extraverted (Mann–Whitney $U = 99.50$ $p = .06$). There were no significant differences with regard to other variables such as the HCR-20, treatment motivation, or engagement.

Completers spent on average 15.18 months in therapy ($SD = 4.90$), noncompleters 7.94 months ($SD = 5.64$). Among the noncompleters, a proportion of 14.3% terminated treatment within the first month, 38.2% spent at least 6 months in the STU, and 11.8% dropped out after at least 1 year of treatment. Juveniles dropping out within the first 7 months ($n = 17$) only differed from those that dropped out later ($n = 17$) in the level of disruptive childhood behavior with $M = 1.82$ ($SD = 0.53$) and $M = 1.35$ ($SD = 0.70$), respectively, $t(29.7) = 2.21$, $p = .04$.

Preanalysis

To avoid multicollinearity, the correlations between the predictors were analyzed a priori. As the engagement ratings were highly correlated ($r = .38$ to $.57$, $p < .001$), they were integrated to an overall engagement index (Cronbach's $\alpha = .77$). In addition, the HCR score was strongly correlated with the level of disruptive childhood behavior ($r = .53$, $p < .001$, two-tailed), the intensity of substance abuse ($r = .49$, $p < .001$, two-tailed), and the overall engagement ($r = -.50$, $p < .001$, two-tailed). In a regression model, the pretreatment variables predicted 61.4% of variance in the HCR-20 score, $F(13) = 19.34$, $p < .001$, and therefore, the HCR-20 did not account for incremental variance in the following regression. As a consequence, we decided to remove the HCR-20 score from the model to gain more detailed information about predictors of attrition that exceeds a combined measure of recidivism risk. After following these steps, correlations between the variables were small to moderate, the variance inflation factor (VIF) was below 1.6 for all variables, and the tolerance did not fall below .66; therefore, multicollinearity was not a problem.

Prediction of Engagement

In a further analysis, we conducted a linear regression on engagement and included all pretreatment variables besides the HCR score. The model was significant, $F(13) = 5.92$, $p < .01$, and explained 29.9% of variance. Young offenders engaged more in treatment when they were highly motivated, had shown less disruptive behavior in childhood, were older, and reported a lower level of aggressiveness (see Table 2).

After controlling for engagement, level of substance abuse ($r_{\text{part}} = .20$) and the number of violent and/or sexual convictions ($r_{\text{part}} = .17$) were significantly correlated with attrition ($p < .05$, two-tailed). Therefore, we can assume that the level of substance abuse has a direct impact on attrition regardless of engagement, whereas the effect of other variables such as age, motivation, disruptive childhood behavior, or aggressive personality is mediated by engagement.

Table 2. Predictors of Engagement (Linear Regression) ($n = 151$).

Variables	Beta	95% CI
Age	0.16*	[0.01, 0.18]
Motivation	0.32**	[0.13, 0.35]
Violent and/or sexual convictions	-0.01	[-0.07, 0.06]
Level of substance abuse	0.02	[-0.06, 0.08]
Disruptive childhood behavior	-0.33**	[-0.40, -0.14]
Extraversion	0.01	[-0.01, 0.01]
Migration	-0.11	[-0.37, 0.05]
Unemployment	-0.09	[-0.36, 0.08]
Aggressiveness	-0.19*	[-0.03, 0.01]
Familial risk	0.04	[-0.05, 0.07]
Neuroticism	0.06	[-0.01, 0.02]
Nonviolent/sexual convictions	-0.13†	[-0.11, 0.01]
Therapeutic experience	0.11	[-0.07, 0.38]
R^2_{korr}	.30	
F	5.92**	

Note. CI = confidence interval.

† $p < .10$. * $p < .05$. ** $p < .01$.

Prediction of Treatment Attrition

We conducted a hierarchical logistic regression with treatment attrition as dependent variable in three steps. Pretreatment variables were added in the first step, and interaction terms of the pretreatment variables were then added in a second step. Finally, in a third step, we added treatment engagement as a within-treatment variable. In all three steps, there was a significant increase of predictive power (see Table 3).

Among the pretreatment variables, low motivation, younger age at admission, and level of substance abuse were significant predictors of therapy attrition. Among the interaction terms, only Motivation \times Level of Substance Abuse had a relevant impact on attrition. Therefore, this term was added to the model in the second step. The other interaction terms were excluded. When adding the interaction term, age and level of substance abuse remained significant, as well as the interaction between substance abuse and motivation. The main effect of motivation was no longer significant. A closer look at the interaction term reveals that level of substance abuse had a stronger impact if motivation was low. If motivation was moderate to high, level of substance abuse only had a small, nonsignificant effect on attrition. In the third step, engagement added significantly to the model and emerged as the most important predictor of attrition, followed by the level of substance abuse.

If voluntary dropouts were removed from the analysis, the results were similar, apart from the fact that unemployment and number of prior convictions became significant predictors in the first and second but not in the third step of the regression.

Table 3. Predictors of Therapy Attrition (Hierarchical Logistic Regression) (*n* = 151).

Variables	Step 1	Step 2	Step 3	
	OR	OR	OR	95% CI
Motivation	0.55*	1.52	3.14	[.70, 14.04]
Age	0.62*	0.58*	0.72	[.43, 1.21]
Level of substance abuse	1.43*	4.16*	5.68*	[1.30, 24.78]
Disruptive childhood behavior	1.73	1.86†	0.95	[.40, 2.24]
Extraversion	0.95	0.95	0.97	[.89, 1.06]
Migration	1.78	1.98	1.36	[.39, 4.68]
Violent and/or sexual convictions	1.21	1.25	1.25	[.86, 1.81]
Aggressiveness	1.03	1.03	1.00	[.92, 1.09]
Unemployment	1.49	1.78	1.17	[.34, 3.97]
Neuroticism	0.98	0.98	1.00	[.92, 1.09]
Familial risk	0.93	0.95	1.03	[.73, 1.47]
Nonviolent/sexual convictions	1.01	1.02	0.86	[.60, 1.23]
Therapeutic experience	1.04	0.88	1.87	[.37, 9.44]
Motivation × substance abuse		0.67*	0.64†	[.40, 1.02]
Engagement			0.06**	[.02, 0.21]
Nagelkerke <i>R</i> ²	.30	.35	.57	
χ^2	32.42	37.49	68.56	
ΔR^2		.05	.22	
$\Delta\chi^2$		5.06*	31.08**	

Note. OR = odds ratio; CI = confidence interval.

†*p* < .10. **p* < .05. ***p* < .01.

Adding the unit as a separate variable (sexual vs. violent offenders) did not change the results in the regression models.

Discussion

Attrition Rates

In our sample, 21.7% of the young offenders terminated treatment prematurely. This dropout rate was relatively low compared with general attrition rates in correctional settings and especially to the high attrition rate for juvenile inpatient treatment reported by Olver et al. (2011). However, in their meta-analysis they had only few studies in juvenile inpatient settings and only small samples. Therefore, our results add to the research base and are at the same time in rather strong contrast. The overall low attrition rates may well be linked to the type of treatment. German STUs follow an integrative and complex treatment concept. This broader approach aims to overcome limits of the “silo approach” in isolated treatment programs (Maguire et al., 2010). Among others, this focuses on generating a therapeutic milieu that is not restricted to therapy

sessions but to the unit as a whole. In fact, Klein, Schmucker, and Lösel (2013, 2015) found significant differences when comparing the therapeutic climate of the STUs at Neuburg-Herrenwörth to regular prison units at the same institution. Klein et al. (2015) also found favorable results in treatment changes, and the attrition rates therefore may signify successful treatment implementation. The low attrition rate we found could also be a consequence of reliable preselection as the young offenders rarely quitted treatment because of cognitive impairments, psychiatric disorders, or motivational deficits that are carefully assessed prior to admission to the STU. It should be noticed, though, that due to legal guidelines sexual offenders were not able to quit treatment by own request; therefore, the attrition rate was slightly higher in violent offenders (24.2%) than in sexual offenders (18.6%). Especially for sexual offenders and vulnerable youth who suffer from harassment in regular prison, the STU offers a "safe space" (Schwaebe, 2005). Hence, those adolescents may try to prevent dropout even if they consider treatment as useless or ineffective. In addition, the loss of privileges such as leaving prison on weekends or working outside prison may also motivate adolescents to stay in the STU as long as possible contributing to a low attrition rate.

Predictors of Therapy Attrition

Among the pretreatment variables, low initial motivation, younger age, and intensity of substance abuse were significant predictors of treatment attrition. These predictors are in line with previous findings.

Young age has been found to predict attrition in various studies (Kraemer et al., 1998; Lueger & Cadman, 1982; Olver et al., 2011). It is not only an indicator of early delinquency, which may have a negative impact on engagement, but also of low maturity or impulsivity. As the mean age in the STU was 19 years, younger offenders might also have difficulties getting integrated in the TC and being accepted by the older adolescents, increasing the risk for conflicts and low compliance. Intensity of substance abuse was another significant predictor of treatment attrition. This corresponds with the meta-analysis by Olver et al. (2011) that found a small but significant impact of substance abuse on attrition, albeit not for sex offenders in particular. For young offenders, Nowakowski and Mattern (2014) also found substance abuse to predict attrition in a violence diversion program. Substance abuse is frequently linked to violence or antisocial lifestyle and may, therefore, enhance the risk of disruptive behavior in treatment. In addition, substance abuse can be accompanied by physical or mental health issues that make treatment failure more likely.

Besides these static risk factors, our study showed that low motivation was a predictor of treatment attrition. Also, Olver et al. (2011) reported that motivation is linked to treatment completion. It was repeatedly found that motivation is a key factor in offender rehabilitation as it is positively associated with therapeutic alliance (Roest, Helm, & van der Stams, 2016; Taft, Murphy, Musser, & Remington, 2004) and treatment outcome (Drieschner & Verschuur, 2010; Leon, Melnick, Thomas, Kressel, & Wexler, 2009). Rehabilitation requires a substantial degree of active client participation to promote change, to adopt behavioral and cognitive strategies,

and to implement relapse prevention plans. Interestingly, apart from motivation showing a main effect on treatment completion, we also found a significant interaction effect of motivation and substance abuse on attrition, indicating that motivation had a buffering effect. Young offenders who were highly motivated at the beginning were more likely to complete treatment even if they had a history of substance abuse. This finding is remarkable, as it discloses a perspective to decrease the risk of treatment failure by implementing programs or modules that increase compliance and treatment motivation. A promising approach is, for example, motivational interviewing (MI; Miller & Rollnick, 2013). MI is a basic approach to facilitate change and aims to elicit change statements through the use of various techniques such as expressing empathy, avoiding arguing for change, and working on ambivalence to strengthen commitment to change. In a systematic review, McMurran (2009) concluded that MI is a promising way to enhance motivation and engagement in offenders and to reduce attrition rates by counterbalancing the negative impact of pretreatment factors on completion. Based on MI, Devereux (2009) developed a short motivational program for incarcerated offenders that can be realized within five sessions and is easily integrated into more complex treatment programs. In a pilot study, clients participating in an initial version of this program gained in motivation and took significantly longer to be reconvicted and rearrested than control participants. However, motivational support should not only be a focus in early sessions of a treatment program, but—as in the “wheel of change” (Prochaska & DiClemente, 1982)—need to address engagement over time. As proposed by the good lives model, frequent goal-setting interviews, strength-based interventions, and the consequent adaption of treatment planning according to the clients’ needs may be helpful to maintain active engagement in all phases of treatment (Ward & Brown, 2004; Willis, Ward, & Levenson, 2014).

The offender files usually did not contain a detailed appraisal of different dimensions of treatment motivation but rather general comments on whether the offender wished to enter treatment by himself or was more reluctant to do so. Therefore, in our rating of initial treatment motivation, we could not rate different dimensions of motivations such as extrinsic and intrinsic motivation. Also, the motives may change over time. Starting treatment in a STU is often more extrinsically than intrinsically motivated (e.g., by expectations of an early release), but intrinsic motivation may increase in the course of treatment. Treatment motivation should be seen as multidimensional concept in offender treatment that often fluctuates over time (Dahle, 1997; McMurran, 2002b). It seems that the development of intrinsic motivation specifically plays a crucial role. For example, Sturgess, Woodhams, and Tonkin (2016) found in a review of 13 studies that offenders with only extrinsic motivation to participate in the treatment were at higher risk of dropout, whereas offenders with a high need for change were more likely to complete. It will be worthwhile to more clearly disentangle the differential effects of motivational dimensions in juvenile offenders, too, by using more refined measures of motivation in future research. Also, investigating how different motivational factors change over time and how this affects treatment outcomes is an important open question. As in our study motivation could be demonstrated as an

important factor of successful treatment completion, a fuller understanding of those processes will certainly help to improve programs for young offenders.

Predictors of Engagement

To our knowledge, this study is the first to examine the link between pretreatment variables, engagement, and therapy attrition in adolescent offenders. In line with previous findings on adult offenders (Drieschner & Verschuur, 2010; Holdsworth et al., 2014; Olver et al., 2011), engagement in treatment was the most important predictor of therapy completion in our study. Dropout might be an immediate consequence of low engagement, as offenders who are not willing or able to take an active part in the treatment are more likely to be excluded from the STU. To the extent that making effort in treatment is aversive (e.g., by provoking shame or a feeling of being overloaded by excessive demands), it requires motivation to buffer those effects (Drieschner & Verschuur, 2010). Without a certain amount of treatment motivation, early obstacles and aversive feelings during treatment may lead to early dropout. However, our findings also suggest that engagement is an important, but not a sufficient, predictor of attrition.

Our findings partially support the integral model of treatment motivation by Drieschner and Verschuur (2010). We found that initial motivation was the strongest predictor of engagement that, in turn, decreased the probability of treatment failure. In contrast, none of the pretreatment variables (age, personality, criminal risk etc.) were significantly correlated with motivation. Besides motivation and young age, disruptive childhood behavior, and aggressiveness also predicted engagement. In a review by Holdsworth et al. (2014), a history of aggression was related to low engagement in group-based treatment in three studies, whereas five studies did not find a significant correlation. In addition, no study found a significant correlation between engagement and anger. Differences in the target group, the treatment design, and the definition of engagement might contribute to the heterogeneity of these findings. Howells and Day (2006) hypothesize that high attrition rates in offender programs are related, in part, to the affective impact of traumatic experiences that reduce the capacity of many offenders to engage in treatment. Therefore, disruptive behavior in childhood can either be seen as an unfavorable reaction on negative circumstances or as a result of low self-regulation that both may influence the young offenders' ability to engage in treatment.

Consequences for Assessment and Treatment Planning

Our findings suggest engagement as best predictor of therapy attrition in young offenders, whereas pretreatment variables had less impact. In other words, treatment completion particularly depends on the adolescents' engagement and not that much on their static preconditions. As a consequence, creating a positive therapeutic climate that favors intrinsic motivation and active participation might help to reach even those "difficult" youth. The widened RNR principles (Bonta & Andrews, 2017) are still a

solid basis for initial assessment and its key indicators have been implemented in the diagnostic phase of the STU. Nevertheless, practice-oriented instruments for measuring responsivity factors and treatment readiness should be further improved. More importantly, we need more knowledge about how pretreatment variables, such as aggressiveness, impede engagement and especially how to overcome these obstacles.

Special emphasis should be placed on very young offenders with a history of anti-social behavior as they are more likely to drop out. Pretreatment risk factors such as age, disruptive childhood behavior, and substance abuse were correlated with the HCR-20 score, especially with the historical items. They should be used as a basic assessment but not overshadow dynamic factors during treatment, in particular signs of engagement. An early impression may sometimes lead to a relative stable image of a young person that bears the risk of less sensitivity for a positive change (Lösel, 2002). Lösel (1996) has postulated an inverse U-shaped relation between risk level and effectiveness in offender treatment, and research on adult offenders seems to support this assumption (Travers, Mann, & Hollin, 2014). As a consequence, it would be reasonable to offer low-intensity programs for low-risk adolescents to counterbalance problems of their lifestyle. On the opposite pole, however, practice should not exclude extremely high-risk youngsters from treatment in expectation of failure (and complications of the treatment process or group dynamics). Therefore, the German STUs do not only have a thorough initial assessment but also a testing phase of several months. Nevertheless, it is not feasible to keep every adolescent in treatment at all costs. To maintain a positive treatment climate and appropriately use resources, it may be necessary to terminate treatment early, but there should be measures to buffer negative effects of treatment failure such as frustration and stigmatization. It is reasonable to offer at least an optional low-frequent or low-intense treatment in regular prison. This would avoid a sweep from intensive to zero treatment and in specific cases enable a restart after some time.

Strengths and Limitations

We are not aware of another study that examined pretreatment and within-treatment predictors of therapy attrition in young offenders participating at a social-therapeutic treatment. Our study comprised all adolescent offenders who entered the STU of Neuburg-Herrenwörth between 2005 and 2013, so there should be no selection bias in the samples of completers and noncompleters. However, the samples are not large, especially the noncompleter group, as the STUs offer a restricted number of places. Consequently, the statistical power may have been insufficient to detect further effects and our findings mainly relate to nonvoluntary terminations. The number of voluntary discharges was simply too low to allow for more detailed analyses. When we restricted our analyses to those offenders who were discharged from treatment, the predictors of therapy attrition in the final step remained unchanged. It should also be taken in account that different reasons for attrition from the STU are usually confounded and cannot easily be divided in “client-initiated” and “agency-initiated” dropout. For instance, adolescents who are unable or unwilling to follow the treatment properly may be more likely

to break prison rules or to show disruptive behavior leading to discharge from the STU. Nevertheless, results cannot simply be generalized to voluntary dropouts and research does suggest that there are various predictors and consequences for different dropout types (Lockwood & Harris, 2013; Vogel, Rüter, Hildebrand, Bos, & van de Ven, 2004). We also need to emphasize that our findings on a German STU for young offenders cannot simply be generalized to isolated offending behavior programs that are common in North America or Britain. Also, the inclusion and exclusion criteria for social-therapeutic treatment differ between the German federal states, and the findings need to be replicated both in Germany as well as internationally. In addition, our sample only consisted of male adolescents, and mechanisms behind treatment attrition are not well investigated across gender. For instance, Martin, Kautt, and Gelsthorpe (2009) found higher attrition rates for female offenders in General Offending Programs compared with males and also concluded that predictors of treatment completion differed between the sexes. In their study, offense severity predicted completion for men while offense diversity did so for women. In line with our findings, drug use increased the risk of noncompletion in men but also decreased the risk in women. This highlights the necessity of considering gender in research on treatment dropout.

As mentioned, there may also have been a bias with regard to the engagement variables when therapists and coders knew about the dropout, but the basic data were provided by the prison staff *before* treatment was regularly or prematurely terminated. Some of the limitations stem from the fact that this study does not research a demonstration or model project but “real life” routine practice. This is also a strength, though, because it takes a look on offender treatment as it actually takes place in the regular justice system. And finally, our study on young offender treatment in a non-English speaking country may encourage research in those parts of Europe where systematic studies on young offender treatment are still extremely rare (Koehler et al., 2013). As always, replication is necessary (Lösel, 2017).


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