Specific Psychological Treatment Versus Treatment as Usual in Adolescents with Self-Harm
Systematic Review and Meta-Analysis

Dennis Ougrin¹ and Saqib Latif²

¹King’s College London, Institute of Psychiatry, Department of Child and Adolescent Psychiatry, London, UK, ²South London & Maudsley NHS Foundation Trust, London, UK

Abstract. Background: Despite recent advances in the understanding and treatment of self-harm, poor engagement with therapy remains a serious problem. Aims: To investigate whether offering specific psychological treatment (SPT) leads to better engagement than offering treatment as usual (TAU) in adolescents who have self-harmed. Method: Data sources were identified by searching Medline, PsychINFO, EMBASE, and PubMed for randomized controlled trials comparing SPT versus TAU in adolescents presenting with self-harm. Results: Seven studies met inclusion criteria, and six were entered into the meta-analysis. There was no statistically significant difference between the number of subjects not completing four or more sessions of an SPT (27.7%, 70/253) than TAU (43.3%, 106/245), RR = 0.71 (95% CI: 0.49–1.05). Conclusions: Engaging adolescents with psychological treatment is necessary although not sufficient to achieve treatment goals. Further research is needed to develop tools for maximizing engagement.

Introduction

Depending on the statistics consulted, suicide is the second or third leading cause of death in adolescents in most Western countries (CDC, 2008; ONS, 2005) and an important cause of death in developing countries (Yip, Liu, & Law, 2008). Self-harm is the strongest predictor of eventual death by suicide in adolescence, increasing the risk up to 10-fold (Hawton & Harriss, 2007).

A range of intervention studies showed effects in reducing self-harming ideation and/or behavior in adolescents (Huey et al., 2004; March et al., 2004; Wood, Trautman, Rothwell, Moore, & Harrington, 2001). Despite these advances, poor engagement with treatment is a major obstacle to providing help to adolescents who have self-harmed.

Research indicates that around 25–50% of the adolescents who engage in self-harm are likely not to attend any follow-up sessions (Granboulan, Roudot-Thoraval, Lemelere, & Alvin, 2001; Taylor & Stansfeld, 1984). Between 50–77% of adolescents disengage from outpatient treatment (Groholt & Ekeberg, 2009; Haw, Houston, Townsend, & Hawton, 2002; Trautman, Stewart, & Mori-shima, 1993), and around 50% are likely to attend only four or fewer outpatient follow-up sessions (Groholt & Ekeberg, 2009; Spirito et al., 1992).

There is growing evidence that disengagement is a marker of poor psychosocial outcomes in adolescents presenting with self-harm (Pillay & Wassenar, 1995), and that adolescents with disengaging coping style tend to have worse psychosocial outcomes (Votta & Manion, 2004).

Most controlled studies of specific psychological therapy for young people who self-harm report engagement as an outcome measure. Several studies specifically designed to improve engagement (Rotherham-Borus, Piacentini, Van Rossem et al., 1996; Spirito, Boergers, Donaldson, Bishop, & Lewander, 2002) had promising results. Yet despite the importance of this topic, there are no published systematic reviews comparing engagement with SPT and engagement with treatment as usual in the adolescents who have self-harmed. To address this gap, we conducted a literature search aimed at identifying randomized controlled studies comparing outpatient SPT with treatment as usual for the adolescents who have self-harmed.
Method

Inclusion Criteria

We included randomized controlled studies of a SPT (defined as a theoretically coherent manualized or otherwise replicable nonpharmacological intervention) versus treatment as usual (TAU, an intervention reflecting current practice in the setting studied) in adolescent patients up to the age of 18 who have self-harmed at least once.

Exclusion Criteria

We excluded those studies in which adolescents with self-harm formed a minority of the study population, those studies that contained at least one type of pharmacological intervention, and those studies that did not evaluate engagement.

Identification and Selection of Studies

We searched OVID Medline® (subject headings “Self-Injurious Behavior,” “Suicide, Attempted,” “Self-Mutilation,” “Suicide,” and “Overdose”), and then searched the databases of PsychINFO, EMBASE, and PubMed using equivalent subject headings. All databases were searched up to December of 2009.

Reference lists of the retrieved articles were examined for additional relevant publications, and cited articles were also searched. These papers were then evaluated for possible inclusion. In addition, we contacted key investigators in the UK, United States, and Australia to obtain the results of any unpublished studies.

No limits were applied to the search apart from study type (treatment studies, randomized control trials) and the age of participants (children and adolescents 0–18 years old).

The retrieved articles from each database were downloaded into EndNote (version X2), and all duplicates were deleted.

The methodological quality of the studies was assessed using allocation concealment as a proxy (Schulz, Chalmers, Hayes, & Altman, 1995; Wood et al., 2008). We used the following quality ratings: 1 = adequate concealment (e.g., using opaque sealed envelopes); 2 = unclear concealment, and 3 = inadequate concealment (e.g., using open random numbers tables). We also calculated the Jadad score for each of the included studies (Jadad et al., 1996).

The search was undertaken by one of the authors (DO). The results were confirmed by an independent search performed by the second author (SL). Disagreements about the inclusion of studies were resolved by consensus.

Self-harm was defined as self-poisoning or self-injury, irrespective of the intent (Hawton et al., 2003). This broad definition commonly used in the UK as well as in other countries (Carter, Reith, Whyte, & McPherson, 2005; De Leo & Heller, 2004) includes self-harm with suicidal intent, nonsuicidal self-harm as well as self-harm episodes with unclear intent.

Engagement was defined as attending four or more sessions of a psychotherapeutic intervention. Where this was not clear, we contacted the study’s corresponding author and obtained clarifications.

Analyses

In the calculation of risk ratio, we used the outcome of the mean number of sessions attended. We dichotomized subjects in each eligible study into two groups: those attending four or more treatment sessions and those attending fewer than four treatment sessions. To calculate the pooled mean effect size we used RevMan (Version 5.0), a computer program developed to support Cochrane reviews and meta-analyses. Each study was weighted in proportion to its sample size.

To estimate heterogeneity, we calculated tau, standard deviation of the mean number of sessions attended in different studies beyond the variation attributable to the play of chance, and the P-statistic (Higgins, Thompson, Deeks, & Altman, 2003). Because there was evidence of significant heterogeneity between studies, we calculated mean risk ratio with random effect model only (DerSimonian & Laird, 1986).

Results

The original search resulted in the retrieval of 820 articles (Figure 1), nine of which described randomized controlled trials in children and adolescents with the primary presenting problem being self-harm or suicidality (Chanen et al., 2008; Cotgrove, Zirinsky, Black, & Weston, 1995; Donaldson, Spirito, & Esposito-Smythers, 2005; Harrington et al., 1998; Hazell et al., 2009; Huey et al., 2004; King et al., 2006; Spirito et al., 2002; Wood et al., 2001); there were four further RCTs in progress or in press (Asarnow, 2009a,b; Greenhill, 2009; Mehlum, 2009).

Seven of the nine studies met the inclusion criteria (Chanen et al., 2008; Donaldson et al., 2005; Harrington et al., 1998; Hazell et al., 2009; King et al., 2006; Spirito et al., 2002; Wood et al., 2001). In one of the studies the information on the subjects’ engagement was not available in the format required (King et al., 2006). Following a discussion, that study was not entered into the meta-analysis, but rather was retained in the qualitative synthesis. The remaining six studies were entered into the
meta-analysis. Selected characteristics of these studies are presented in Table 1.

The quality of the studies was variable; random allocation concealment was evident in four of the studies, and it was unclear in the rest. The Jadad score for each of the studies included in the meta-analysis was 3, and it was 2 for the study included only in the qualitative synthesis.

The trials included in this meta-analysis reported the effects of the following SPT: specific problem-solving intervention designed to increase adherence to outpatient treatment (Spirito et al., 2002); skills-based cognitive behavior treatment targeting problem solving and affect management skills (Donaldson et al., 2005); home-based family therapy delivered by social workers (Harrington et al., 1998); developmental group psychotherapy incorporating the techniques of problem-solving and cognitive-behavioral interventions; dialectic behavior therapy and psychodynamic group psychotherapy (Hazell et al., 2009; Wood et al., 2001); and individual cognitive analytic therapy designed to prevent the development of borderline personality disorder (Chanen et al., 2008).

We compared the reported engagement with an SPT and TAU in the six studies included (n = 498). Overall there was no statistically significant difference between the number of subjects not completing four or more sessions of an SPT (27.7%, 70/253) than TAU (43.3%, 106/245), RR = 0.71 (95% CI: 0.49–1.05), Figure 2.

There was significant heterogeneity between the studies. The small number of studies precluded further subgroup analysis or meta-regression. The study reporting the biggest positive effect of specific – in this case, family home-based – therapy on engagement was different from other studies in that the intervention was delivered at home. In that study the proportion of young people attending four or more appointments of routine outpatient care did not differ significantly between the experimental and the control group 35% versus 39% (χ² = 0.199, df = 1, p = .655), respectively, if the home visits were excluded. Another study also found a significant increase in the sessions attended, though after adjustment for barriers to receiving services in the community, such as being placed on a waiting list and insurance coverage difficulties (Spirito et al., 2002).
Table 1. Selected characteristics of the RCTs reporting the effect of SPT versus TAU on engagement* in adolescents with self-harm

<table>
<thead>
<tr>
<th>Study, Country</th>
<th>Inclusion criteria</th>
<th>Age</th>
<th>Control</th>
<th>N</th>
<th>Interventions</th>
<th>ITT</th>
<th>Allocation</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spirito et al., 2002</td>
<td>Suicide attempters receiving care in ED or pediatrics ward</td>
<td>12–18</td>
<td>Standard disposition planning</td>
<td>76</td>
<td>Compliance enhancement and standard disposition planning</td>
<td>Subjects completing treatment</td>
<td>Not specified</td>
<td>3 months</td>
</tr>
<tr>
<td>Donaldson et al., 2005</td>
<td>Suicide attempters presenting to ED or inpatient unit</td>
<td>12–17</td>
<td>Supportive relationship treatment</td>
<td>39</td>
<td>Skills-based treatment</td>
<td>Subjects starting treatment</td>
<td>Not specified</td>
<td>6 months</td>
</tr>
<tr>
<td>Wood et al., 2001, UK</td>
<td>Repeat self-harmers referred to an outpatient service</td>
<td>12–16</td>
<td>TAU</td>
<td>63</td>
<td>Developmental group psychotherapy + TAU</td>
<td>Subjects randomized</td>
<td>Concealed</td>
<td>7 months</td>
</tr>
<tr>
<td>Harrington et al., 1998, UK</td>
<td>Self-poisoning cases referred to mental health teams</td>
<td>&lt; 16  (mean 14.5)</td>
<td>TAU</td>
<td>162</td>
<td>Home-based family intervention + TAU</td>
<td>Subjects randomized</td>
<td>Concealed</td>
<td>6 months</td>
</tr>
<tr>
<td>King et al., 2006, US</td>
<td>Suicide attempters, significant suicidality</td>
<td>12–17</td>
<td>TAU</td>
<td>289</td>
<td>Youth-nominated support team-Version 1 + TAU</td>
<td>Subjects randomized</td>
<td>Concealed</td>
<td>6 months</td>
</tr>
<tr>
<td>Chanen et al., 2008, Australia</td>
<td>2–9 DSM-IV criteria for borderline personality disorder + specified risk factors for BPD</td>
<td>15–18</td>
<td>Standardized good clinical care</td>
<td>86</td>
<td>Cognitive analytic therapy</td>
<td>Subjects randomized</td>
<td>Concealed</td>
<td>24 months</td>
</tr>
<tr>
<td>Hazell et al., 2009, Australia</td>
<td>At least 2 episodes of self-harm, one in past 3 months, referred to outpatient service</td>
<td>12–16</td>
<td>TAU</td>
<td>72</td>
<td>Developmental group psychotherapy + TAU</td>
<td>Subjects randomized</td>
<td>Concealed</td>
<td>12 months</td>
</tr>
</tbody>
</table>

*Engagement is defined as attending 4 or more sessions. Abbreviations: TAU = treatment as usual; SPT = specific psychological treatment; ED = emergency department.

Table 2. Participants’ flow and engagement in the RCTs reporting the effect of SPT versus TAU in adolescents with self-harm

<table>
<thead>
<tr>
<th>Study, Country</th>
<th>Eligible</th>
<th>Randomized</th>
<th>Completed Follow-up</th>
<th>Attended 4 or more sessions</th>
<th>Mean Total N of Sessions Attended</th>
<th>Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spirito et al., 2002</td>
<td>82</td>
<td>36</td>
<td>40</td>
<td>63</td>
<td>22</td>
<td>7.7 (8.4)*</td>
</tr>
<tr>
<td>Donaldson et al., 2005</td>
<td>44</td>
<td>21</td>
<td>18</td>
<td>31</td>
<td>15</td>
<td>9.7</td>
</tr>
<tr>
<td>Wood et al., 2001</td>
<td>83</td>
<td>32</td>
<td>31</td>
<td>62</td>
<td>23</td>
<td>11.5</td>
</tr>
<tr>
<td>Harrington et al., 1998</td>
<td>288</td>
<td>85</td>
<td>77</td>
<td>149</td>
<td>63</td>
<td>7.6**</td>
</tr>
<tr>
<td>King et al., 2006</td>
<td>697</td>
<td>151</td>
<td>138</td>
<td>236</td>
<td>Not reported</td>
<td>Not reported</td>
</tr>
<tr>
<td>Chanen et al., 2008</td>
<td>106</td>
<td>44</td>
<td>42</td>
<td>78</td>
<td>35</td>
<td>13.0**</td>
</tr>
<tr>
<td>Hazell et al., 2009</td>
<td>138</td>
<td>35</td>
<td>37</td>
<td>68</td>
<td>25</td>
<td>8.8</td>
</tr>
</tbody>
</table>

*adjusted for barriers to services, **median. Abbreviations: TAU = treatment as usual; SPT = specific psychological treatment; Q = quality of studies.
Discussion

The results of this meta-analysis indicate that there is no evidence of specific psychotherapeutic treatment leading to a better engagement than TAU in the adolescents who have self-harmed. This is of concern given the prevalence of self-harm (Madge et al., 2008) and the growing evidence base for effective treatment (Wood et al., 2001) and prevention methods (Asehline et al., 2007). The absolute difference in engagement rates was not insignificant, however, with 72.3% of SPT versus 56.7% TAU completing four or more sessions of treatment. No statistically significant difference may have been observed because of insufficient power, thus warranting further research. Using nQuery Advisor 4.0 we estimated that a study with 172 participants in each group (344 in total) would be required for there to be an 80% chance of detecting a statistically significant difference in engagement between SPT and TAU (at the two-sided 5% level) provided the relative distribution of engagement rates were the same as in the present meta-analysis.

The limitations of the studies in this meta-analysis include small sample size, uncharacterized TAU (with the exception of Donaldson et al., 2005), and not reporting the treatment utilization in voluntary organizations (with the exception of Harrington et al., 1998). A significant proportion of the adolescents presenting with self-harm were excluded prior to randomization or lost to follow-up, further limiting the generalizability of the findings.

The limitations of this meta-analysis include a small number of studies precluding subgroup analysis and significant heterogeneity among the studies. One of the studies was specifically designated to improve adherence (Spirito et al., 2002), whereas the rest of the studies had other primary outcome measures. In the study with the largest effect on engagement (Harrington et al., 1998), family therapy intervention was delivered by social workers at the subjects’ home. The study with the least favorable effect on engagement compared a challenging, skills-training-based therapy with a supportive and manualized treatment delivered by highly trained therapists (Donaldson et al., 2005). This TAU was arguably significantly different from the treatment to be expected in ordinary clinical practice.

We used attendance at four or more sessions as an indicator of engagement. This is necessarily an arbitrary cutoff point, although used by many researchers (Spirito et al., 1992; Wood et al., 2001). Alternative cutoff points were considered. Attending at least one follow-up session seems a replicable and generally available outcome measure; however, previous studies indicate the importance of dose-response relationships in child psychotherapy (Howard, Kopta, Krause, & Orlinsky, 1986), which should not be ignored. Equally, the total number of sessions attended provides a good overall picture of engagement with treatment but would generally be prejudicial against those young people who do not attend many appointments because of the resolution of their symptomatology.

Studies included in this meta-analysis showed overall better engagement rates than some of the previous naturalistic studies (Spirito et al., 1992; Taylor & Stansfeld, 1984). Nonsignificant differences discovered appear all the more robust as much greater attention might be expected to be paid to experimental conditions in research studies than in TAU.

The studies included used different definitions of self-harm, reflecting uncertainty over the reliability of intent assessment. This difference is unlikely to have influenced the overall conclusion as there are no published studies documenting the differential engagement of young people presenting with suicidal versus nonsuicidal self-harm.

Is good engagement with follow-up reflected in better outcomes? The answer to this question does not appear to be unambiguous. Whereas some authors find this to be the case (Pillay & Hassenkiair, 1995), others question the relationship between engagement and outcomes (Burns et al., 2008). It is possible that engagement with SPT leads to better outcomes than engagement with TAU (Rotheram-Borus, Piacentini, Cantwell, Belin, & Song, 2000; Rotheram-Borus et al., 1996; Rotheram-Borus, Piacentini, Miller et al. or Rotheram-Borus, Piacentini, Van Rossem et al. 1999). It is also clear that, without good engagement, no treatment can be effectively implemented.

Offering SPT is only one factor that might have an impact on engagement. Several studies attempted to improve engagement by influencing other factors with varying success. There is some evidence that using the first assessment in a therapeutic way could improve engagement (Ougrin, Ng, & Low, 2008; Ougrin et al., in press). It is, however, unlikely that in isolation any one factor will increase engagement with follow-up.

Conclusion

Engaging adolescents with psychological treatment is essential, although not sufficient, to achieve treatment goals. Engagement with outpatient psychotherapy remains poor among adolescents who have self-harmed in clinical practice, although it appears to be better in clinical trials. There is currently no evidence that SPT is superior to TAU in improving engagement. Offering treatment at home could improve engagement. Other interventions that might improve engagement include tackling service and family barriers to treatment and using the first contact with young people therapeutically. Future research might focus on developing interventions that take a range of factors influencing engagement into account.
References


Ougrin, D., Zundel, T., Ng, A., Banarsee, R., Bottle, A., & Taylor, E. (in press). Trial of Therapeutic Assessment in London (TOTA): Cluster randomized controlled trial of therapeutic assessment versus standard psychosocial assessment in adoles-
cents presenting with self-harm. *Archives of Disease in Childhoo*


**About the authors**

Dr. Dennis Ougrin, MBBS, MRCPsych, PGDip, is a Kraupl Taylor Research Fellow at the Institute of Psychiatry in London, UK, and a Child and Adolescent Psychiatrist at the Maudsley Hospital, London, UK. He graduated from LaViv Medical University in Ukraine, and his main research interest lies in therapeutic assessment for adolescents presenting with self-harm.

Dr. Saqib Latif, MBBS, MRCPsych, is a Specialty Registrar (ST5) in Child and Adolescent Psychiatry. He graduated from King Edward Medical College, Pakistan. He moved to the UK in 2003 and attained the membership of Royal College of Psychiatrists. His research interest lies in the etiology of mental illness and early intervention.

**Saqib Latif**

South London & Maudsley NHS Foundation Trust
78 Lewisham Park
London SE13 6QJ, UK
Tel. 44 203 2281000
Fax 44 208 6905521
E-mail saqiblatif@doctors.org.uk

**Dennis Ougrin**

King’s College London
Institute of Psychiatry
Department of Child and Adolescent Psychiatry
PO 85
De Crespigny Park
London SE5 8AF, UK
Tel. 44 207 8480957
Fax 44 207 7085800
E-mail dennis.ougrin@kcl.ac.uk