Abstract

BACKGROUND: This paper builds on a Cochrane-Campbell systematic review of interventions that reduce harms and promote reintegration in street-connected children and young people focusing on intervention outcomes. The aim of the present analysis is to explore questions raised in the systematic review over the potential role of service engagement in mediating outcomes of relevant interventions.

OBJECTIVE: The paper summarises engagement-related findings from quantitative intervention evaluations with street-connected populations of children and young people, as reported by study authors. It seeks to contribute to theoretical and methodological understandings of service engagement with street-connected youth populations and to highlight gaps in current knowledge.

METHODS: Drawing on the original search for the Cochrane-Campbell review, we re-screened search results in our database and included quantitative findings if relevant to our current research questions, regardless of study design. Additionally, we sought new study publications from authors whose work was included in the original systematic review. The discussion explores relevant data from five studies included in the original systematic review, ten studies excluded from the review, and two studies published after the completion of the review.

RESULTS: The measures of service engagement in the included studies focused on treatment attendance, 'level of engagement', and service satisfaction. Evidence on the impact of service engagement on other outcomes in interventions for street-connected children and young people was limited. Available data on the predictors and impact of service engagement were mixed and appear not to provide robust support for common hypotheses in the relevant context.

Service Engagement in Interventions for Street-Connected Children and Young People: A Summary of Evidence Supplementing a Recent Cochrane-Campbell Review

In this paper we seek to address research questions raised by a Cochrane-Campbell systematic review of interventions to reduce harms and promote reintegration among street-connected children and young people which focused on intervention outcomes (Coren et al. 2013). Twelve therapeutic interventions were included in the original systematic review. The absence of clear outcome effects for most interventions included in meta-syntheses in our systematic review was partially explained by the fact that control conditions were commonly equally successful in achieving positive outcomes, and in some cases more so than the actual intervention (Coren et al. 2013). This suggested that contextual and process factors, including engagement-related factors, play an important role in interventions with street-connected children and young people.

However, the engagement-related data presented in the included studies, briefly captured in the systematic review alongside data relevant to other outcome mediators, appeared inconclusive, leading us to conduct a more extensive and focused exploration of quantitative engagement-related data, supplemented by relevant data excluded from the systematic review. Our discussion seeks to contribute to the future development of appropriate conceptual and methodological frameworks accounting for service engagement in intervention evaluations with street-connected youth.

The mechanisms of change, i.e. the facilitators and mediators of positive outcomes involved in therapeutic interventions remain a subject of debate (Kazdin 2000). Service/ treatment engagement is nevertheless one of the factors frequently argued to mediate positive

intervention outcomes in mental health and substance abuse treatment with children and youth (Slesnick et al. 2000; Staudt 2007), as with adult populations (e.g. Ibabe et al. 2014; Simpson 2004). In particular, the early stages of engagement are commonly identified as crucial for establishing longer term therapeutic relationships which appear to play a central role in many interventions (Connolly and Joly 2012; Mowbray et al. 1993; Simpson 2004).

The importance of treatment engagement has particularly been highlighted in research with 'hard-to-reach' populations, including the homeless (Mowbray et al. 1993; Zerger 2002). Street-connected children and youth have a reputation for being difficult to engage in therapeutic and other service interventions for reasons ranging from the practical to the psychological (Garrett et al. 2008; Morrissette 1992; Slesnick et al. 2000). For example, many street-connected children and youth have experienced traumatic relations with significant others (Ferguson 2009), and their mistrust of adult authorities may be compounded by negative experiences on the street and/ or the formal care system (Karabanow 2008; Whitbeck et al. 1997).

As a further challenge, street-connected children and young people typically present with multiple problems and needs ranging from material deprivation and lack of safety to developmental needs (Slesnick et al. 2000). On the other hand, street-connected children and young people across the world often display considerable resilience, and may be integrated into an alternative, self-sufficient subculture with its own benefits and rewards (see e.g. Davies 2008; Kidd and Davidson 2007). All of these factors may, in combination with external factors, contribute to avoidance of and resistance to service engagement. Such challenges are discussed in more detail in a thematic synthesis of studies related to engagement strategies and processes in interventions based in low and middle-income countries, which we conducted in conjunction with our systematic review (Coren et al. 2014).

Service engagement may be seen as a dynamic process taking different forms at different stages, ideally culminating in disengagement from services with the achievement of social reintegration. Active outreach as a first step of engagement has been identified as a crucial component of services for connecting street-connected children and young people with services (Connolly and Joly 2012), while subsequent treatment engagement and retention pose further challenges. According to a recent longitudinal study, chronically homeless young people in Dublin, Ireland, were distinguished from those successfully exiting homelessness within a period of 18 months by a higher reliance on emergency services and successive temporary accommodation (Maycock et al. 2013), a finding supported by anecdotal evidence from the US (Milburn et al. 2005). This raises the question of how service users with multiple and intensive needs can be encouraged to transition from emergency services to more comprehensive interventions, providing such are available.

Because of its multiple, dynamic and somewhat elusive determinants, treatment engagement has also been described as the 'black box' of therapeutic treatment (Simpson 2004). Further, the defining features of engagement remain ambiguous, and the processes and mechanisms by which engagement impacts on outcomes are not well understood (see for example Staudt (2007), for a critical overview of relevant literature on family mental health interventions). Research on homeless adults has suggested that engagement among homeless individuals may not be shaped by demographic factors, as documented in other service contexts (Mowbray et al. 1993). Compared to studies on adult populations, there has been relatively little empirical research on the role of engagement factors in psychological interventions with children and young people, let alone those with street connections (Scivoletto et al. 2012).

Estimates of numbers of street-connected children and youth are necessarily imprecise, and depend on varying definitions. The definition of street-connectedness we have adopted for our work seeks to accommodate the diverse and fluid nature of street situations and identities across the globe, as asserted by numerous researchers (Coren et al. 2013). It is also sensitive to variations in cultural and socio-economic context. In research from high income countries, relevant populations are most commonly referred to as homeless. However, this term also encompasses children and youth in a wide range of situations. For example, among studies included in this discussion, a distinction can be made between populations recruited from temporary residential shelters, sometimes referred to as 'newly homeless', and those recruited from drop-in centres and arguably more entrenched in street culture.

Perceptions of street-connectedness as a social problem have also shifted over time. Rooted in material and social as well as psychological circumstances, street-connectedness defies conceptualisation as a mental health issue. Nevertheless, studies evaluating individual and symptom-oriented therapeutic interventions with street-connected youth populations using randomised controlled trials are increasingly common (Kidd 2012); albeit that the interventions reflect a relatively broad range of therapeutic orientations, including systemic and ecological approaches. In parallel, a body of research examining the predictors and processes of exiting homelessness over a longer time period has been emerging in a number of high-income countries over recent years (Cheng et al. 2013; Mallett et al. 2009; Maycock and Corr 2013; Milburn et al. 2009; Milburn et al. 2007; Roy et al. 2014; Slesnick et al. 2008a; Slesnick et al. 2013b; Whitbeck 2012). Such broader perspectives suggest that available services typically play a limited role in facilitating social reintegration, relative to other factors.

Exiting the streets is thus a complex process, within which engagement with services forms only one possible component, and always in interaction with a broad range of moderating and mediating variables, as illustrated in Fig. 1, a logic model depicting interconnected elements that potentially shape intervention success (Anderson et al. 2011) [1]. Relevant dimensions include individual and family background, psycho-social variables such as resistance and resilience, informal support networks, and transitional services.

In this paper, we focus on the nature and role of service engagement within the framework of specific interventions. The research questions we address in our discussion are:

1. How has service engagement been conceptualised and measured in quantitative outcome research with street-connected populations of children and youth?
2. What is the relationship between contextual factors and service engagement factors in the relevant context?
3. What is the relationship between engagement variables and intervention outcomes in the relevant context?

Method

The study selection for the current analysis draws on our original search for the Cochrane-Campbell review. For the systematic review, a digital search of nineteen major databases was undertaken. Studies were considered eligible for the systematic review if they

[1] This previously unpublished logic model was developed as part of the original systematic review (Coren et al. 2013).

involved street-connected populations aged 0-24; involved harm-reduction, inclusion or reintegration programmes; and employed robust study methodologies. Specifically, studies were required to include a comparison group with participants randomised to intervention or comparison group. Screening in EROS software, data extraction and quality appraisal were independently completed by two review authors[2]. Further details on search strategy and review methods are reported in Coren et al. (2013). For the purpose of this analysis, the studies included in the Cochrane-Campbell review were re-examined for data relevant to the research questions by one study author. This resulted in the selection of three relevant service engagement variables for further exploration.

For a broader evidence base, we decided also to include relevant studies considered for the systematic review, but excluded due to study design, primarily due to the lack of a comparison group. Since all includable studies only included relevant process data for intervention groups in their analyses, the potential lack of a comparison group was not considered a relevant exclusion criterion for the current analysis. A further manual search was conducted in Google Scholar to identify recently published studies by the authors included in the original systematic review, and their reference lists were reviewed for other relevant studies.

Additionally, we conducted a keyword search of titles and abstracts in the existing database of search results in the course of a descriptive mapping (Martin et al. 2014), to identify other studies relevant to the selected engagement-related empirical concepts. This search was

[2] Some of the data discussed in this paper has been briefly summarised in the systematic review.

limited to the available database (framed by the original systematic review search terms) and was guided by our chosen engagement-related theoretical and empirical frameworks. All studies were included in the current analysis on the basis of their relevance to the research questions and presentation of relevant quantitative data. Study publications typically did not include primary data related to engagement variables, and our discussion relies on authors' own data analyses, as reported in the included papers.

Search Results and Description of Included Studies

The results of the search and inclusion process are illustrated in Fig. 2. The original search for the Cochrane-Campbell review resulted in 29,151 records, of which eleven studies, reported in twelve publications and comprising twelve separate interventions conducted in high-income countries[3] were included in the systematic review (Coren et al. 2013). No studies conducted in low and middle income countries met the methodological eligibility criteria of the systematic review. All of the included interventions were therapeutically oriented. The theoretical frameworks adopted in the included interventions were varied, as were intervention goals and outcomes measured. While the systematic review was originally interested in a broad range of reintegration-focused outcomes, outcome data from included interventions focused mainly on reductions in substance use, mental health indicators, and sexual health risks. In nine out of twelve studies included in the original systematic review, the control condition consisted

[3] As defined by the World Bank (World Bank list of economies, July 2012)

of service-as-usual, i.e. services as provided by a shelter, drop-in centre or hostel (in the remaining three studies, control conditions were not detailed at any length).

Of the twelve studies included in the systematic review, engagement-related analyses were reported in five studies (Baer et al. 2007; Peterson et al. 2006; Rotheram-Borus et al. 2003; Slesnick and Prestopnik 2009; Slesnick et al. 2007). All of these studies were based in the US. Peterson et al. (2006) and Baer et al. (2007) evaluated a similar intervention based on Brief Motivational Interviewing (BMI); Slesnick et al. (2007) focused on a Community Reinforcement Approach (CRA) intervention complemented by a cognitive HIV prevention intervention; Slesnick and Prestopnik (2009) compared Functional Family Therapy (FFT) with Ecologically Based Family Therapy (EBFT); and Rotheram-Borus et al. (2003) examined a social-cognitive intervention focusing on sexual health and HIV prevention (See Table 1 for a summary of study characteristics).

The engagement-related variables we identified from these studies as being relevant to the current analysis were: treatment attendance (five studies), 'level of engagement' (two studies) and service user satisfaction (two studies). Study retention rates were reported in the majority of the intervention evaluations included in the Cochrane-Campbell review, and seven study publications reported separate analyses on aspects of study retention. While we considered including data on study retention, the lack of demonstrable relevance of study retention to service engagement led us to omit these data from the analysis.

Additionally, for the purpose of this discussion, we included ten relevant publications considered for inclusion in the systematic review, but not meeting all of the inclusion criteria. Five of these represent US-based work conducted by Professor Natasha Slesnick's research team (Slesnick 2001; Slesnick et al. 2006; Slesnick et al. 2011; Slesnick et al. 2008b; Slesnick and

Prestopnik 2004)[4], and examine treatment attendance for different modalities of therapeutic intervention (EBFT, FFT, CRA and Motivational Enhancement Therapy (MET)) with various subpopulations of street-connected children and young people. Based on a manual search, we included two further outcome/ process evaluations from this team published after the completion of the systematic review searches in March 2012, and containing data on treatment attendance (Marchionda and Slesnick 2013; Slesnick et al. 2013a). These focused on a family therapy (EBFT) intervention, and a comparison of family therapeutic (EBFT) and two motivational treatment modalities (CRA and Motivational Interviewing (MI)), respectively.

For further data on treatment attendance, we included a Brazilian study involving a multi-component drop-in centre described as a service innovation (Scivoletto et al. 2012) and a study comparing community reinsertion rates among three residential shelters in Brazil and Peru (Harris et al. 2011). We also included findings from two shelter-based studies based in Israel, focusing on service satisfaction in the context of usual shelter service (Peled et al. 2005; Spiro et al. 2009), and a comparable shelter-based study based in the US (Heinze et al. 2010).

Results

Conceptualisation of Engagement in Effectiveness Studies of Interventions for Street-Connected Children and Youth

[4] This relatively extensive body of work enables a higher level of between-study comparison and contributes to a progressive accumulation of evidence, but may introduce a degree of bias into our conclusions owing to similarities in study samples, intervention settings, and research methodology across the studies.

In this section we briefly outline conceptual and methodological approaches to engagement in the included studies.

Recruitment. None of the studies included in the systematic review focused on intervention recruitment or acceptance as an indicator of engagement, and few publications provided information on intervention outreach and recruitment strategies. The vast majority of the studies also did not report on intervention/ study recruitment rates. However, some studies indicated difficulties with participant recruitment. For example, Milburn et al. (2012) report that only 34% of adolescents originally interested in the intervention were able to participate in the study with their families. The reasons for this were not discussed. The research populations in the included interventions consisted predominantly of children and youth recruited through homeless/ runaway shelters or drop-in centres, and included few children and youth without access to any services and arguably more at risk.

Engagement. While strategies for engaging participants beyond the initial stage were commonly not explicitly discussed in the included studies , the majority of the interventions professed certain qualities, such as a non-judgmental approach, confidentiality and a supportive interpersonal environment, which have consistently been identified as prerequisites for trusting relations between service providers and street-connected children and youth (Connolly and Joly 2012; Darbyshire et al. 2006; Ensign and Gittelsohn 1998; Garrett et al. 2008; Schweitzer et al. 2013; Stewart et al. 2010; Taylor et al. 2007).

Some of the intervention models used in the included studies, such as motivational interviewing which aims at offering a ‘low-threshold, low-demand’ service (Baer et al. 2007), are specifically designed to engage hard-to-reach service users. Slesnick et al. (2000) provide a detailed, theoretically informed discussion of engagement strategies employed in an

behaviourally oriented family therapy intervention, apparently similar to the interventions used in subsequent effectiveness trials included in this analysis. Specifically, their discussion focuses on the ongoing and dynamic interactions between the therapist and the participating individual and his or her family, including joint negotiation of intervention goals and participatory evaluation.

Practical facilitators of engagement were also highlighted in some of the studies focusing on specialised interventions. Baer et al. (2007) aimed at improving the engagement aspects of a brief motivational intervention tested in Peterson et al. (2006). These improvements focused on increased opportunities to use motivational interviewing and building rapport, the length and spread of sessions, range of interview topics, incentives and service integration. In a study employing an individual treatment modality, Slesnick et al. (2007) speculate that providing the intervention within the youths' comfort-zone (a drop-in centre), using an open door policy for treatment appointments, and employing competent and charismatic therapists, may be successful engagement strategies.

The analyses in Heinze et al. (2010), Spiro et al. (2009), and Peled et al. (2005) specifically examined service-related factors which were likely to impact shelter satisfaction based on previous research and study pilots with youth populations. These included food, safety, and supportive relationships. In the context of multi-component shelter services, it is however difficult to distinguish between intervention core components, process factors, and engagement strategies.

Variables Measured

The following empirical variables were adopted in the included studies to measure intervention engagement among participating street-connected youth (see also Table 1).

Treatment attendance. The most commonly used variable intended to capture service engagement in the included studies was that of treatment attendance, measured in a number of different ways, including length of completed sessions, number of sessions completed, and completion of at least one intervention session. Treatment attendance was examined in eleven studies (Harris et al. 2011; Marchionda and Slesnick 2013; Rotheram-Borus et al. 2003; Scivoletto et al. 2012; Slesnick et al. 2006; Slesnick et al. 2013a; Slesnick et al. 2011; Slesnick et al. 2008b; Slesnick and Prestopnik 2004; Slesnick and Prestopnik 2009; Slesnick et al. 2007). Treatment attendance is relatively easy to measure, although different measures of treatment attendance may yield different results (Slesnick et al. 2011). Further, one study highlighted the fact that knowledge of sufficient or optimal treatment 'dosage' for therapeutic interventions is only tentative (Slesnick et al. 2013a).

Level of engagement. While indicative, treatment attendance does not necessarily capture participants' engagement with the intervention at the level of emotional commitment, or what can be described as attitudinal, in contrast to behavioural, components of engagement (Staudt 2007). Only two studies (Baer et al. 2007; Peterson et al. 2006) adopted an empirical construct measuring this aspect of engagement, described as 'level of engagement' and based on the intervention counsellor's assessment. The counsellor also rated participants' receptiveness to feedback, session effectiveness, and the counsellor's own confidence that the youth would make changes, which were combined in relevant statistical analyses. Because level of engagement required assessment by the intervention counsellor, it was not observed for the treatment-as-usual group. How counsellors evaluated participants' level of engagement is not detailed, and Baer et al. (2007) point out the subjective nature of this measure.

Service satisfaction. Service satisfaction evaluations, two of them qualitative, were reported in only four studies included in the systematic review. Quantitative satisfaction ratings in Peterson et al. (2006) and Baer et al. (2007) were mainly positive, and for this reason excluded from analysis in Peterson et al. (2006). While reported alongside data on treatment exposure, no correlational analyses were performed on this measure in Baer et al. (2007). For complementary data, we examined two studies based in Israel (Peled et al. 2005; Spiro et al. 2009) and one US-based study (Heinze et al. 2010) focusing on shelter provision and providing a more detailed examination of the determinants of service satisfaction. These studies construe service satisfaction as an indirect indication of service engagement, and potentially an important outcome in itself. Moreover, according to Spiro et al. (2009), participants may feel empowered by the opportunity to express their views on a service.

Factors Shaping Engagement in Interventions for Street-Connected Children and Youth

In this section, we examine findings from relevant analyses focusing on factors shaping the three types of engagement-related variables used in the included studies to study engagement – treatment attendance, level of engagement and service satisfaction. In the majority of included studies, data on these variables was collected only for intervention groups based on specialised therapies, and can thus not be compared with service as usual.

Background variables associated with treatment attendance, level of engagement and service satisfaction. In an early study by the Slesnick research team (Slesnick 2001), participant background variables including ethnicity, gender, and family type, abuse history, number of runaway episodes and substance use were found not to predict treatment attendance. The only significant background predictor for longer treatment attendance was perceived lack of parental care, which, together with faster access to therapy, accounted for 20% of the variance.

In contrast, a later study found (Slesnick et al. 2008b) that two variables predicted treatment attendance to a significant effect, notably in the unexpected direction, with history of sexual abuse and suicide attempt predicting higher treatment attendance. This is an encouraging if unique finding suggesting that individuals who have had traumatic experiences may be easier to engage in specialised treatment. In Slesnick and Prestopnik (2004), family composition, ethnicity or gender were not found to be significantly associated with treatment attendance in either intervention group.

In a Brazilian study on shelter treatment attendance among street-connected children and young people, age and residential status were identified as significant predictors of treatment attendance (Scivoletto et al. 2012). A comparison of psychiatric diagnosis status revealed that participants with mood disorders, 'other' disorders or no disorders were significantly more likely to adhere to treatment than participants with substance use disorders, or mood and substance use disorders. The interactions of diagnostic status and place of residence (family vs. shelter) vis-à-vis treatment adherence were conflicting, depending on the diagnosis. The authors observe that treatment drop-out rates for participants with substance use disorders were comparably high, despite the shelter providing a competent service incorporating appropriate engagement strategies, such as a non-judgmental approach, provision of transport vouchers, and family engagement.

Adopting an alternative, more qualitative measure of service engagement, Peterson et al. (2006) found that participants' 'level of engagement' (as rated by the motivational counsellor) did not differ by age, gender, length of time on the street, baseline drug use, history of injection drug use, sexual and physical abuse history, or recruitment method, which included shelter and street-based recruitment. Length of the intervention session however was found to vary

according to participants' level of engagement, with those considered 'highly engaged' having somewhat longer sessions. Treatment exposure (length of sessions) is also reported in Baer et al. (2007), but no related analyses are provided.

Spiro et al. (2009) found no correlation between age and sex and overall satisfaction with a homeless shelter. In Heinze et al. (2010), age, sex, gender and ethnicity were significantly correlated with shelter satisfaction, but only participant age remained significant in a final regression model.

Comparison of treatment attendance across treatment modalities. Treatment modality (ecological vs. functional family therapy), was found to predict treatment attendance in two studies (Slesnick and Prestopnik 2004; Slesnick and Prestopnik 2009). Age and gender are cited as moderating factors in the latter study. A more recent study found no statistically significant differences in treatment attendance (expressed as percentage of available sessions attended) across treatment modality (Slesnick et al. 2013a). An alternative quantitative measure comparing participants who completed no sessions to those completing at least one session, has been found to favour home-based ecological family therapy over community reinforcement approach therapy and motivational enhancement therapy (Slesnick et al. 2011) and over office-based functional family therapy (Slesnick and Prestopnik 2004).

In Slesnick and Prestopnik (2004), individual and family predictors of treatment attendance were found to vary according to the treatment modality, with externalisation problems contributing a significant amount of variance in treatment attendance for EBFT, whereas for FFT, family income and family chaos both contributed to a significant amount of variation in different directions. Similar variation in terms of a broad range of individual and family predictors of treatment attendance were found in Slesnick et al. (2011), which compared

three treatment modalities (EBFT, CRA and MET). Gender, speed of engagement and family factors (e.g. cohesion) were found to be significantly associated with treatment attendance for EBFT; ethnicity and parental monitoring were found to be significantly associated with attendance for CRA; and age, runaway episodes and coping strategies were found to be significantly associated with attendance for MET. The average percentage of total sessions did not vary significantly according to treatment group in this study.

Process factors associated with treatment attendance and service satisfaction. The reasons for differences in treatment attendance may also lie with engagement-related factors. As mentioned above, faster access to therapy was found to be a significant predictor of treatment attendance in one study (Slesnick et al. 2008b). Quick access to therapy also explained some variation in treatment attendance for family therapy, but not individual therapies, in Slesnick et al. (2011). Slesnick et al. (2007) report on statistically significant therapist effects on reductions in substance use, while the observed effect on number of sessions completed was less marked, contrasting with a reverse finding in a previous study (Slesnick et al. 2006). A quantitative analysis in the context of a similar family therapy intervention found that higher levels of parental (but not adolescent) communication, and higher proportions of therapist-to-parent communications were associated with longer treatment attendance, suggesting the importance of parental involvement over youth/ adolescent involvement (Marchionda and Slesnick 2013).

Other process factors shaping treatment attendance were not extensively explored in the included studies. According to Rotheram-Borus et al. (2003), the number of intervention sessions completed varied across the shelters at which the intervention took place, and, in one shelter, was significantly associated with length of stay at the shelter. Slesnick and Prestopnik (2009)

speculate on the role of the intervention location (home vs. office), but this was not empirically examined.

According to Spiro et al. (2009), statistically significant predictors of overall shelter satisfaction in one study were the quality of food, relationships with staff, and opinions about peers staying at the shelter, while housing, regime and activities did not make a statistically significant contribution. Length of stay was also not associated with service satisfaction. Acording to data from another study, analysed in the same publication, only conformity with rules had a positive and statistically significant correlation with shelter satisfaction, whereas the quality of relations with peers and participation in shelter activities were not statistically significant variables. According to a similar analysis in Heinze et al. (2010), appropriate structure, empowerment, and positive social norms were significantly associated with shelter satisfaction, in interaction with participant age.

Impact of Service Engagement in Effectiveness Studies of Interventions for Street-Connected Children and Youth

How important, then, are engagement-related factors in predicting treatment outcomes with street-connected children and young people? In comparison to the body of evidence on predictors of treatment engagement, this question was addressed in a surprisingly small number of included studies. We summarise relevant data from seven included studies below.

Impact of treatment attendance and level of engagement. In a retrospective analysis of data from two service provider agencies in Brazil and Peru, length of most recent shelter stay (ranging from less than one month, to over six months) was found to significantly predict community reinsertion success, the only outcome examined in this survey, for both interventions

(Harris et al. 2011). Other important predictors were source of referral (e.g. correctional institutes, other residential shelters or street educators), and participants' education history.

In an analysis by Slesnick et al. (2008b), treatment attendance of six sessions or more was associated with a reduction in alcohol use, but not with reduced use of other substances. In a study comparing three treatment modalities of various lengths (four/ fourteen sessions) (Slesnick et al. 2013a), there were no statistically significant differences in treatment attendance according to treatment modality, and all interventions achieved similar outcomes, particularly revealing three contrasting types of treatment responses among participants. According to the authors' analysis, youth who improved in terms of substance use were no different in their treatment participation rates from youth who deteriorated. Overall, participants attended only, on average, 43% of the available sessions. It should be noted that the study did not employ a comparison group receiving service as usual or no treatment.

Taking a more quality-oriented measure, a predictive relationship was found between participants' level of engagement and only one out of three main outcomes (summed use of drugs other than marijuana) in Peterson et al. (2006). This finding was not replicated in a similar study (Baer et al. 2007), despite improvements made specifically to intervention engagement strategies. Service satisfaction also appears to be a weak predictor of outcomes, although the data in this area is equally limited. None of the relevant studies included in the original systematic review reported service satisfaction to be a factor mediating outcomes. Spiro et al. (2009) and Peled et al. (2005) report some significant correlations between service satisfaction and self-reported improvements, but in contrasting areas (personal change/ family relations). No statistically significant correlations were found in these studies with respect to different types of residential placement.

Discussion

Theoretical and Empirical Conceptualisations of Engagement

Recruitment and/ or treatment acceptance rates were not reported in the included studies. Difficulties in accessing appropriate treatment/ services has been reported elsewhere as a significant barrier to social re-integration among street-connected youth (Cheng et al. 2013). Some studies have suggested a low degree of acceptability and perceived efficacy of mainstream therapeutic services, such as clinical counselling, among some street-connected children and young people (Cormack 2009; Karabanow and Clement 2004). The therapeutic interventions included in this analysis are likely to have benefitted from collaboration with usual services for engagement purposes. Nonetheless, the lack of data on treatment acceptance as an indicator of service engagement in effectiveness studies is a considerable limitation in view of assessing intervention appropriateness and acceptability among potential participants.

Most studies also did not empirically conceptualise engagement as an inter-relational process. For example, measurement of the strength of therapeutic alliance, which can be considered a conceptually integral part of engagement (Karver et al. 2006; Simpson 2004), similar to group cohesion in group-based interventions (Yalom 1995), was absent from all of the included studies. It would seem important for studies to control for such potential mediators, given the strong emphasis that street-connected children and youth tend to place on experiencing trustful, respectful, and friendly relations with service-providers, according to qualitative research literature (e.g. Darbyshire et al. 2006; Kidd et al. 2007; Stewart et al. 2010). The same emphasis on the importance of feelings of care and belonging surfaces in evaluations of family therapy (Slesnick et al. 2013b) and peer-based interventions (Bademci and Karadayi 2013). Relevant outcomes may be related to levels of trust, belonging or self-efficacy.

Treatment attendance was the most frequently measured engagement variable in the included studies. However, treatment attendance may not be the ideal proxy measure for treatment involvement in this context because of the unstable environments of many street-connected children and young people, as well as the potential presence of co-interventions. Further, since optimum treatment length with regards to specialised therapeutic interventions with street-connected children and young people – commonly offered as part of a broader service programme – has not been demonstrated (Slesnick et al. 2013a), treatment drop-out is not a straightforward indicator of intervention failure. Treatment drop-out may also be considered a symptom of common psychological resistances, which can present therapeutic opportunities if responded to in an appropriate professional manner (Slesnick et al. 2012). Such subtle and complex dynamics may be difficult to capture through quantitative measures, both on the level of processes and outcomes.

The only qualitatively oriented measures of engagement used in the included studies (used only in two studies) were those of level of engagement and service satisfaction. The former appears to lack both validity and reliability in the current context. The latter measure is susceptible to positive response bias and may thus have limited utility. However, service satisfaction was the most participatory measure used in the included studies and, as noted by a study author, research participants may find it empowering to making their views known.

Empirical Findings on Factors Shaping Engagement

Data on the demographic and contextual determinants of engagement were mixed. The observed determinants of service engagement, emerging from a relatively large evidence base involving a broad range of interventions, appeared variable and context-specific, preventing generalisation even across a specific intervention modality. The findings from research into

predictors of service engagement raise interesting questions, but ultimately fail to significantly advance our understanding of the nature and determinants of service engagement in the relevant context. This can be attributed, in part, to conflicting findings across different intervention contexts and with different subpopulations of street-connected children and young people, and partly to methodological and conceptual heterogeneity, as researchers have utilised varied statistical analyses which focus on a wide and diverging range of factors in this area of study.

Thus far, the role of demographic factors has been more widely researched than service-related engagement strategies or other process factors. Additionally, although the majority of the evaluation studies discussed in this paper involved a control condition, their analyses of service engagement were restricted to intervention conditions, preventing a comparison of mediating variables. On the other hand, the study populations, whether in intervention or control groups, may have represented a motivated and engaged subpopulation set on a relatively positive trajectory of change regardless of the intervention or specific engagement strategies.

Empirical Findings on the Impact of Engagement Variables on Intervention Outcomes

The limited findings available did not provide robust support for the notion that either length or quality of engagement, as measured in the included studies, are crucial components of intervention success with street-connected populations. For example, as measured in the available research literature, engagement-related factors did not appear to have a statistically significant impact on outcomes such as substance abuse. In the absence of relevant data on treatment-as-usual groups, comparisons could not be made on the relative strength and impact of engagement-related factors between specialised interventions and service-as-usual. However, on the basis of current findings pertaining to intervention conditions only, differences in service

delivery with regard to intervention length (Slesnick et al. 2013a) or rapport-building measures (Baer et al. 2007) have failed to show demonstrable impact on chosen outcomes.

There may be several explanations for this. For example, as discussed above, it may be that the measures used in these studies do not adequately capture salient aspects of engagement. Apart from demographic features and service-related process factors, many other factors potentially contributing to intervention outcomes, such as the strength of street-based peer networks, or access to housing[5] and education (Cheng et al. 2013; Maycock and Corr 2013), were not accounted for in the available analyses. In respect to this, the socio-economic context, including the service and welfare context in which interventions are situated (see Fig. 1), as well as the theoretical and disciplinary orientation of researchers, may determine the focus of research.

Limitations

Our exploration of the data was based on relevant empirical concepts used in studies included the original systematic review, and we may have omitted findings related to alternative constructs of engagement. The publications examined in this analysis were identified from an existing database designed for the purpose of a previously published systematic review and a purposive manual search, and was therefore not systematic. We did not perform meta-analyses of relevant data for this discussion, but have provided an overview of findings as reported by study

[5] Only one study (Tischler et al. 2002) included in the original systematic review controlled for housing status (e.g. being housed during the course of the study) as a potential mediator of outcome variables. This study did not examine engagement-related factors.

authors. Finally, we did not assess study quality or risk of bias for studies included in this discussion but excluded from the original systematic review.

Conclusion

The role of engagement-related factors as outcome mediators in interventions directed at street-connected children and youth is understudied. While the studies included in our overview employed relatively robust methods of data collection and analysis, the evidence-base on engagement-related factors in the relevant context currently consists of a growing body of idiosyncratic findings. Statistically significant findings were not replicated in equivalent studies and our exploration revealed no discernible patterns with implications for interventions. Hence, the research literature offers few answers to the complex questions of 'how programs affect individuals, who is most affected, and under what circumstances' (Lipsey and Cordray 2000), as examined in this paper. The reporting in the research literature of negative/ counter-intuitive findings should, however, be recognised as valuable, since they challenge simplistic models of service engagement, especially those focusing on participant characteristics without accounting for other contributing factors (see Fig. 1).

Implications for Research

The acceptability and appeal of the included intervention types among shelter-based and street-based populations of children and youth, in comparison to usual services, remain largely unaddressed. There is a need to evaluate different types of interventions and services, especially those that depart from the therapeutic models discussed in this paper. With regard to engagement strategies, more evaluative research is needed particularly on services which differ in their methods of outreach, recruitment and referral to further services.

The majority of the interventions discussed were therapeutic interventions offered alongside service-as-usual, thus engaging populations already accessing relatively comprehensive services. In order to investigate the broader efficacy of interventions in this context, studies are needed to investigate differences between those who are successfully recruited to interventions, and those who do not seek out or cannot be engaged with services.

Considering the fact that treatment attendance has been found to mediate outcomes in other contexts, more studies controlling for this variable are needed. On the other hand, more work is needed for developing alternative valid and reliable quantitative measures of service engagement, including its interpersonal aspects, on the basis of existing instruments (e.g. Park et al. 2002). These should be explored in relation to a broad range of outcomes relevant to street-connected populations of children and young people.

We also would support, based on our work in the area, research which considers the clinical and practical relevance and applicability of findings over and above statistical significance. In addition, it would seem important to collect comparable data on perceived mediating variables across treatment conditions, and to include these in the statistical analyses performed, in order to populate a better evidence base regarding engagement and other process factors.

Implications for Practice

Because of material and practical resource constraints, services are rarely in a position to carefully match service users to the optimal type of intervention according to individual needs and profiles, even were it possible to determine the ideal ‘match’ through service engagement, as noted in the context of drug treatment (Simpson 2004). Although the present discussion cannot offer much in way of practical recommendations, it is worth noting that successful engagement

does not appear to be consistently determined by specific service user characteristics. Furthermore, although the role of service engagement in facilitating positive outcomes is still unclear, qualitative research findings consistently emphasise street-connected children and young people's appreciation of the engagement-related aspects of services, particularly safe environments and caring relationships based on mutual trust and respect, testifying to their high intrinsic value regardless of other outcomes.

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Tables

Study reference	**Country**	**Intervention type(s)**	**Participant characteristics (sample size, age & gender), inclusion criteria**	**Study design, data collection**	**Relevant variables measured**
Baer et al. 2007	USA	Brief Motivational Intervention	N=127, 14-19, mixed gender & ethnicity, unstable housing, binge drinking & treatment criteria	RCT, survey	Impact of 'level of engagement' on substance use
Harris et al. 2011	Brazil, Peru	Residential shelters	N = 863, age & gender not specified, various referral routes	Retrospective analysis of agency data	Effect of length of stay on post-residence outcomes
Heinze et al. 2010	USA	Six agencies	N=133, 10-24, mixed gender & ethnicity, accessing residential or other targeted services	Cross-sectional, survey	Programme characteristics associated with service satisfaction
Marchionda & Slesnick 2013	USA	EBFT (Family therapy)	N=180 families, 12-17, randomly selected subset of RCT participants, shelter residing, meet DSM-IV criteria for substance use, parental engagement	Cross-sectional, survey	Effect of first session communication on treatment attendance
Peled et al. 2005	Israel	Two shelters	N=345, 13-21 mixed gender, ex-residents	Retrospective survey	Effect of service satisfaction on post-residence outcomes
Peterson et al. 2006	USA	Brief Motivational Intervention	N=285, 14-19, mixed gender & ethnicity, unstable housing, binge drinking & treatment criteria	RCT, survey	Impact of 'level of engagement' on substance use
Rotheram-Borus et al. 2003	USA	HIV intervention (CBT)	N=311, 11-18, mixed gender & ethnicity, criteria not specified	RCT, survey	Effect of shelter on treatment attendance
Scivoletto et al. 2012	Brazil	Biopsychosocial treatment with case management	N=351, 12-19, mixed gender, living in shelter/ with family and considered high-risk	Prospective observational study	Effect of psychiatric disorders on treatment attendance, moderators
Slesnick & Prestopnik 2004	USA	EBFT, FFT (Family therapy)	N=76, mixed gender & ethnicity, primary alcohol problem, caregiver involvement	RCT, survey	Predictors of treatment attendance

Study reference	Country	Intervention type(s)	Participant characteristics (sample size, age & gender), inclusion criteria	Study design, data collection	Relevant variables measured
Slesnick & Prestopnik 2009	USA	EBFT, FFT (Family therapy)	N=171, 12-17, mixed gender & ethnicity, primary alcohol problem, parental engagement	RCT, survey	Predictors of treatment attendance
Slesnick 2001	USA	EBFT (Family therapy)	N=36, mixed gender & ethnicity, meet DSM-IV criteria for psychoactive substance use, caregiver involvement	1-group pre/post-test, survey	Demographic predictors of treatment attendance
Slesnick et al. 2006	USA	Family therapy	N=242, 12-17, mixed gender & ethnicity, meet DSM-IV criteria for psychoactive substance use, parental engagement	RCT, survey	Therapist effect on treatment attendance
Slesnick et al. 2007	USA	Community Reinforcement Approach (CBT) + HIV intervention	N=180, 14-22, mixed gender & ethnicity, meet DSM-IV criteria for substance misuse, homeless	RCT, survey	Therapist effect on treatment attendance
Slesnick et al. 2008b	USA	Community Reinforcement Approach (CBT)	N=133, 14-22, mixed gender & ethnicity, meet DSM-IV criteria for substance misuse	1-group pre/post-test, survey	Impact of treatment attendance on substance abuse, demographic moderators
Slesnick et al. 2011	USA	EBFT (Family therapy), CRA & MET (CBT)	N=179, 12-17, mixed gender & ethnicity, meet DSM-IV criteria for psychoactive substance use	RCT, survey	Predictors of treatment attendance
Slesnick et al. 2013a	USA	EBFT (Family therapy), CRA, MI (CBT)	N=179, 12-17, mixed gender & ethnicity, meet DSM-IV criteria for substance use, caregiver involvement	RCT, survey	Impact of treatment attendance on substance abuse
Spiro et al. 2009	Israel	Shelter	N=102, 13-20, mixed gender, ex-residents	Retrospective survey	Predictors of service satisfaction

Table 1: Characteristics of included studies

Figures

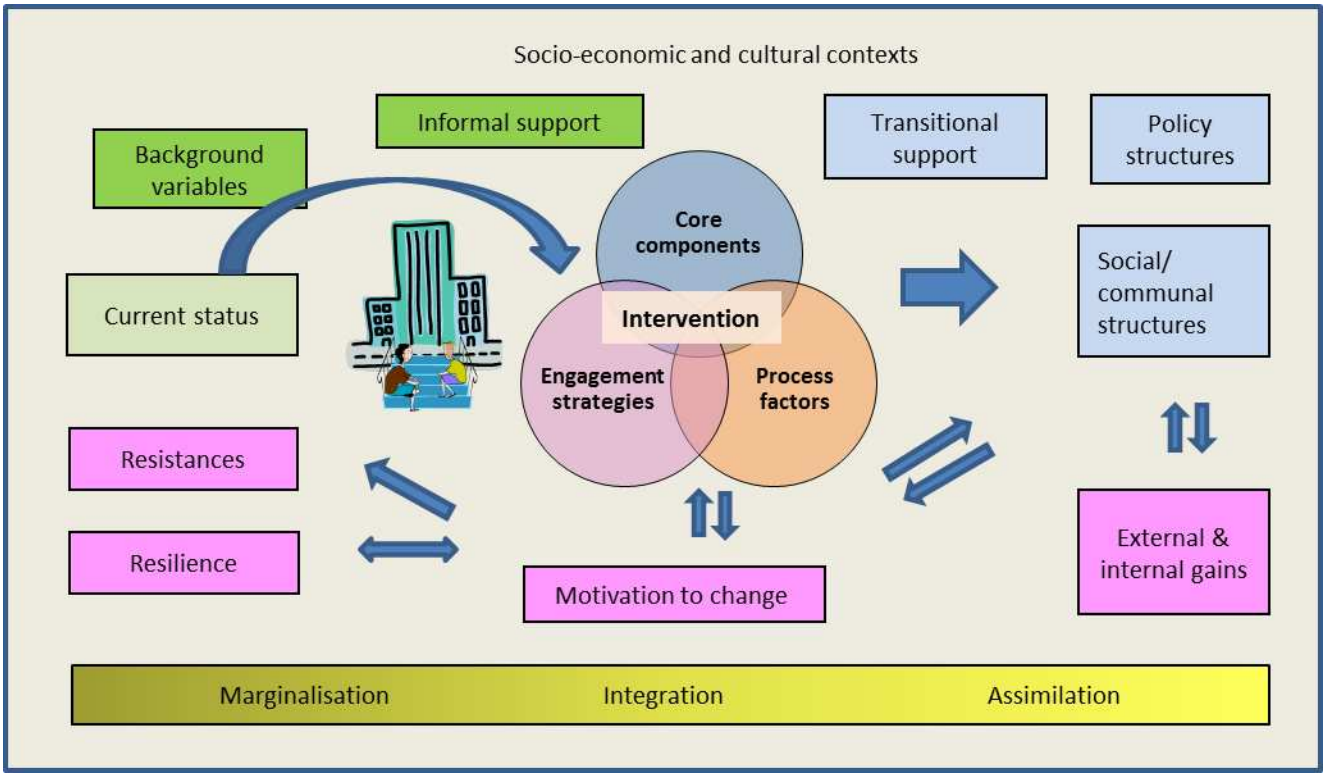

Fig. 1: The role of service engagement in the context of promoting reintegration and reducing harmful behaviour and lifestyles in street-connected children and young people. The figure provides a hypothesised logic model of the elements and dynamics of change involved in relevant interventions.

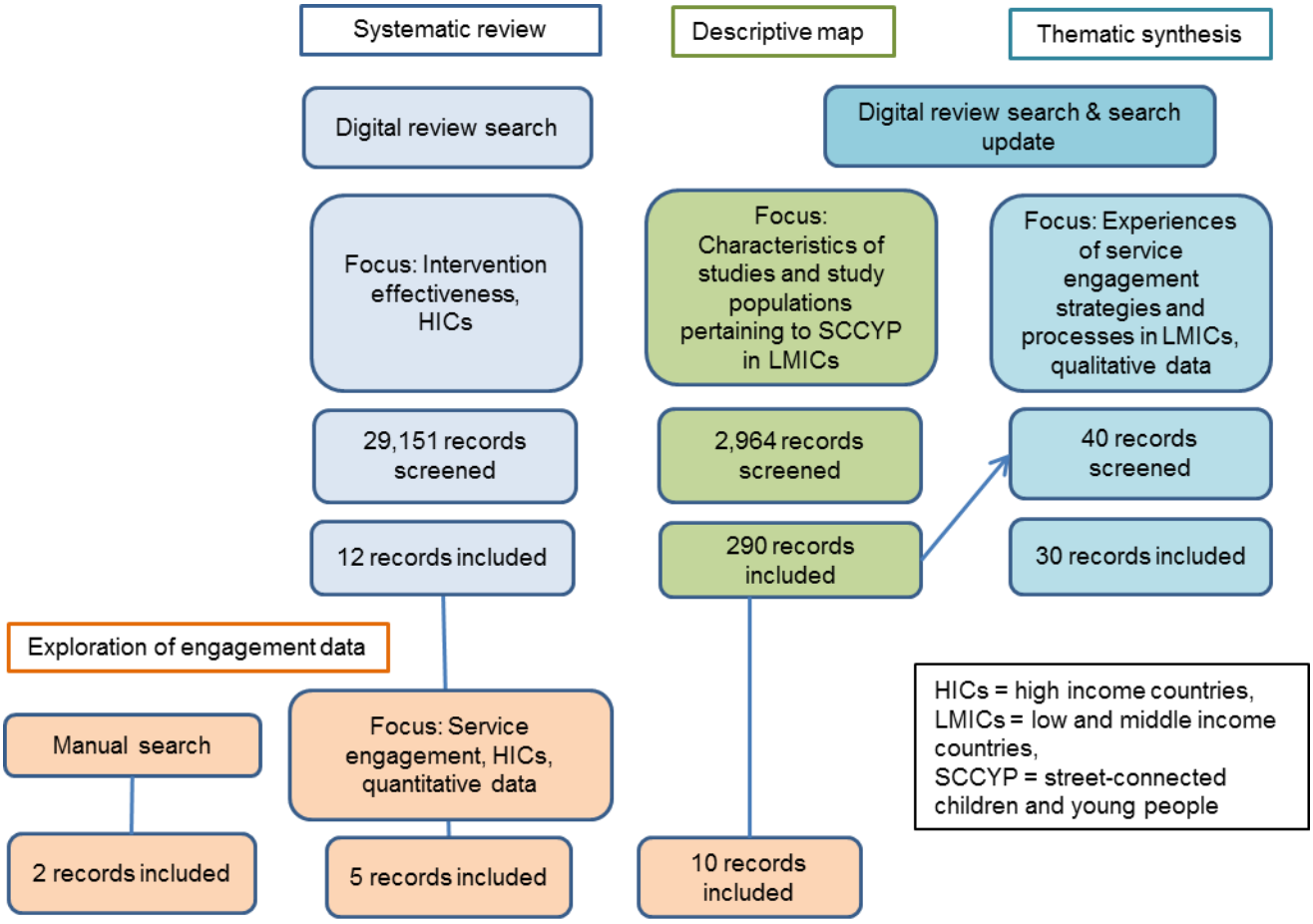

Fig. 2: Flowchart of study components informing the current analysis