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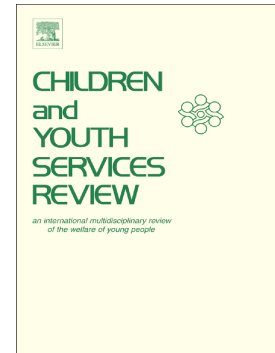
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Resilience and Resilience Factors in Children in Residential Care: A Systematic Review

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Abstract

Young people raised in residential care settings are more vulnerable to poor mental health than peers in the general population. Resilience can protect mental health and promote recovery from adversity. The lack of a single clear conceptualisation of resilience reflects its complex, multifaceted nature, but create obstacles for measurement in this population. This review explored the conceptualisation, operationalisation and measurement of resilience in children and adolescents living in residential care settings. Databases were investigated up to November 2017 and fifteen studies were included. Among the resilience-related factors found, those promoting interpersonal relationships and development of a future focus and motivation were particularly noticeable. Overall, adolescents in residential care were reported as being more vulnerable and presenting more problems compared to peers. Higher levels of resilience were associated with better developmental outcomes. Recommendations are made to systematically include and evaluate resilience promoting design and interventions in residential care settings.

(148 words)

Keywords: residential care, resilience, vulnerability, systematic review

1. Introduction

Alternative care may take the form of informal care, including any family environment where the child is looked after on a temporary or permanent basis by relatives or family friends, prior to an order of the judicial authority, or formal care, comprising all care provided in a family environment ordered by a competent administrative body or in private facilities, such as foster, kinship, and residential care (United Nations, 2010). Recognising the international variations in terminology (e.g. 'foster children' in the USA and 'looked after and accommodated children' in the UK), we describe these children as 'care-experienced' or in 'alternative care', unless specified to a particular care setting. Children in alternative care experience elevated levels of psychopathology, neurodevelopmental disorders and educational difficulties (Ford, Vostanis, Meltzer, & Goodman, 2007), compared to their non-care-experienced peers. The difficulties often persist into adulthood, with high levels of incarceration, homelessness and unemployment, reflecting in part a background of significant early-life adversity (Culhane & Taussig, 2009). These difficulties are particularly amplified amongst adolescents accommodated in residential care, with higher rates of mental illness, including suicidal tendencies, depression and post-traumatic stress disorder (PTSD), than youth in other community populations (Gearing et al., 2015). Recent evidence suggests a prevalence of psychiatric disorders of 76% in children in residential care, compared to 8% in the general child population (Jozefiak et al., 2016). This supports earlier evidence of risk of depression being 50%, twice that of children in foster care (Dimigen et al., 1999).

In this context, it is tempting for researchers and practitioners alike to focus on problems, risk and crisis management, and harm reduction in institutional settings. In doing so, a strengths-based approach that fosters long-term resilience is de-emphasised.

Resilience is defined as the ability to cope after a trauma/stressor (Masten et al., 1999; Masten, 2001) and is further defined as a set of individual features that may offer coping/protection in facing adversity (Hoge, Austin, & Pollack, 2007). The capacity to “bounce back” from adverse life circumstances (Tugade & Fredrickson, 2011) reflects adaptation and is an evolutionary survival mechanism. This capacity exists on a continuum ranging from well-adapted (and highly resilient) to maladapted (low resilience, predisposed to psychiatric disorders) (Ehlert, 2013). Latterly, the definition of resilience has changed from a trait-oriented, intrinsic, personality trait to an outcome or a process-oriented perspective (Wright, Masten & Narayan, 2013), in which mental health can be regained or maintained despite adverse life events (Kalisch et al., 2017). The exposure to significant risks or adversity is necessary for the emergence of resilience (Chmitorz et al., 2018). This definition opens up the possibility that resilience, as an outcome, can be modified and predicted by multiple factors, including epigenetics, personality traits, and beliefs (Southwick, Bonanno, Masten, Panter-Brick, & Yehuda, 2014). Beyond individual features, environmental factors play their role (e.g. social environment, availability of and access to economic resources). Lastly, resilience can also be understood as a dynamic and adaptive process, influenced by features of the adversity (e.g. chronic or acute events, level of exposure, direct or indirect) and played out in multiple possible trajectories in the aftermath of the event (Bonanno, Romero, & Klein, 2015). One step beyond this definition is represented by posttraumatic growth (Angel, 2016), in which individuals

describe improved functioning after exposure to adversity through positive transformation in multiple domains (e.g. increasing closeness, optimism, spiritual values).

In order to provide evidence of resilience the individual has to display a successful outcome or adaptation. This could be problematic for care-experienced young people who are exposed to particularly high and chronic levels of risk, often pre-dating birth, that make measurement of pre-adversity functioning difficult. Nonetheless, resilience has been linked to better quality of life and health outcomes in care-experienced youth more generally (Chia & Lee, 2015). A review of eight evidence-based interventions aimed at promoting resilience in children in foster care reported improved outcomes, including decreased placement disruptions (thus reducing the likelihood of entering residential care), improved child attachment to adults, reduced child behavioural and emotional problems, and increased child strengths (Leve et al., 2012). The promotion of resilience has been the focus of frameworks developing children's attachment, self-regulation, and competency (Blaustein & Kinniburgh, 2010; Jones et al., 2011). Treatments promoting resilience for children in foster care resulted in positive outcomes including school attendance and the avoidance of negative outcomes, such as violent criminality and use of psychotropic drugs (Jones et al., 2011). It is likely these benefits would extend to children in residential care (Dimigen et al., 1999).

Differentiated from foster care, residential care usually focuses on keeping youth safe in a group and thus pays more attention to the avoidance of negative behaviours, rather than promoting positive outcomes. As a consequence of risk-averse practices, care environments may be too restrictive to allow opportunities for resilience to be expressed and developed. Fostering resilience in residential care settings is therefore of particular relevance given the

levels of prior adversity and the compromised outcomes currently found. This is reflected in the evidence base for resilience in residential care where measurement seems to reflect a problem-focus (or absence of problem), as opposed to a strength-focus. For example, Born, Chevalier, & Humblet (1997) conceptualised resilience as a rare phenomenon defined by absence or decrease of delinquent acts.

Other studies have focused on promoting strengths and resilience in residential-care adolescents. Lietz (2004) suggested a new theoretical framework of residential treatment, using resilience as the foundation and social learning theory as the strategy. Resilience-building and social learning theory are hypothesised to work on both internal and external, as well as long-term and short-term changes. Three successful case studies examined two groups that were from residential facilities using this framework (Lietz, 2007; Nourian et al., 2016; Sesma, Mannes, & Scales, 2013) and suggested a developmental assets framework, which consisted of 40 research-based, positive experiences and qualities influencing children's development. They also described the relationship between the strengths-focus framework and the resilience framework, and suggested that both frameworks shared similarities, such as positive outcomes, but differed in other areas such as a lack of previous adverse experiences in the developmental assets framework.

The lack of consistent resilience conceptualisation implies disagreement about the nature of resilience (Nourian et al., 2016) and its influence on individual or systemic outcomes (Kaplan, 2005). Heterogeneity in the definition of resilience makes it difficult to operationalize or to develop a "gold standard" measure. Whilst diverse conceptualisations and measures provide multiple viewpoints and pathways to pursue in prevention and intervention programs

with children and young people, there is also scope for ambiguity in which practice remains problem-focused and at odds with theory and research. This review will synthesise the various conceptualisations of resilience in the evidence base. Individual and environmental (internal and external) characteristics of resilience will be considered. As resilience has been defined as related to the achievements of positive outcomes in facing inner and outer adversity (Kaplan, 2005), the review focuses on indicators of positive outcomes instead of the cessation or reduction of negative outcomes such as poor mental health, involvement with the criminal justice system, substance misuse or homelessness; with a focus on mental health in the context of residential child care.

2. Method

This review examines the nature of resilience in youth in residential care and synthesises the evidence for associations between resilience and behavioural outcomes, with a focus on mental health in the context of residential care. Positive measurements of resilience, in which the variables of interest were positive characteristics or outcomes were included whilst studies using measurement of resilience as the absence or reduction of negative outcomes were excluded.

2.1 Inclusion and exclusion criteria

The inclusion criteria for our systematic review were as follows: a) any study design investigating a population of children and adolescents under 19 years, who had prior or current experience of residential care settings (e.g. residential care or treatment). Residential care settings were defined in a broad sense according to UN Guidelines for the Alternative Care of

Children (United Nations, 2010) as “care provided in any non-family-based group setting, such as places of safety for emergency care, transit centres in emergency situations, and all other short- and long-term residential care facilities, including group homes.”(p.6) ; b) studies that contained an empirical quantitative or qualitative design, methodology and results; c) resilience was conceptualised and measured as the presence/growth of one or more characteristics conceptualised by the study authors as beneficial to wellbeing and development; d) articles published up to November 2017 were eligible for inclusion; e) the articles sourced had English-language abstracts and keywords, were available in full-text (i.e. not conference proceedings) and were published in peer-reviewed journals.

The exclusion criteria were as follows: studies including a) residential settings that were specifically for the care and treatment of young people with moderate or profound learning disabilities were excluded; b) conceptualisation and measurement of resilience solely as the absence of negative outcomes (e.g. psychopathology, delinquency); c) various sample populations including residential care but without specification in the results; d) neither conceptualisation, nor valid measurement of resilience; e) studies only published as dissertations were excluded based on the potential lack of peer-review.

The age restriction is based on most studies’ recruitment of minors under 18, with one year extended to ensure comprehensive inclusion. As resilience constructs have developed upon, rather than replaced, earlier theories, we saw no rationale for excluding older studies; therefore, no date limit was set on publication.

2.2 Literature Search strategy

This review was performed following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist and guidelines (Liberati et al., 2009; Moher et al., 2010). Searches were conducted up to November 2017, with no limit set on the start date. The following online databases were sourced for a primary search: MEDLINE, ASSIA (Applied Social Science Index and Abstracts), PsycINFO, and Your Journals@OVID (including PsycARTICLES). Medical Subject Headings (MeSH) were used to increase the efficiency and precision of literature searching skills allowing to locate articles on a specific topic rather than just mentioning it. The search terms were truncated (as indicated by *) and combined with Boolean operators as follows: residential OR accommodated AND resilience OR protective AND child* OR teen* OR youth or young. The secondary search was based on screening references of relevant articles and flagging up those potentially relevant. A protocol was registered for this study with PROSPERO (Centre for Reviews and Dissemination at the University of York). The published number was 42016038861.

2.3 Study selection

All search hits were recorded, reviewed and screened by the authors. Authors were trained to review articles through formal departmental training, with one author, experienced in conducting systematic reviews, acting as supervisor. Decisions on initial screening of articles were closely supervised. An article was initially considered irrelevant if the first two inclusion criteria were not met. Most articles were considered irrelevant (e.g. air pollution, cardiopulmonary, elderly), and 153 articles were duplicated. Grey literature in the form of 18

possibly relevant dissertations was recognised and screened, as likely later published in a peer-reviewed journal. All were subsequently excluded.

[Figure 1 about here]

Secondary searches were conducted on related and relevant articles after screening. Fifty-five studies were evaluated and analysed in the secondary search. Six were duplicated with the first search, and the rest did not meet all inclusion criteria. All articles reviewed at full-text stage were checked by minimum two authors. There was no disagreement. See Figure 1 for a flowchart of the selection process.

2.4 Data extraction

Selected articles were closely scrutinised with characteristics and key findings tabulated. The findings were then summarised and synthesised based on the research questions.

2.4 Quality Assessment

Quality assessments were carried out on every study and disagreement was discussed to reach consensus (Supplementary Table B). Included studies consisted of both qualitative and quantitative research methods, and varied by different study designs, including non-comparative studies (e.g. case-series study), qualitative studies (e.g. case description study) and observational studies (e.g. cross-sectional and cohort studies). For each study design, two extra questions were included to judge quality. Aside from study designs, the criteria of quality assessments also included criteria on study question, population, measurements, statistical analysis and results. In addition, since there have not been any validated tools for cross-

sectional studies (The University of Nottingham, n.d.) the current assessment criteria were devised based on National Institutes of Health's (NIH) assessment tool for observational cohort and cross-sectional studies and the Effective Public Health Practice Project's (EPHPP) assessment tool for quantitative studies. All other questions in the assessment were based on the Scottish Intercollegiate Guidelines Network (SIGN, 2001), the Critical Appraisal Skills Programme's (CASP) criteria for qualitative studies and cohort studies, and NIH's criteria (https://www.nhlbi.nih.gov/health-pro/guidelines/in-develop/cardiovascular-risk-reduction/tools/case_series) for case-series studies) (see online supplementary Table A for full criteria).

3. Results

The main characteristics of all included studies are summarised in Table 1.

3.1 Near-misses

In all, 15 studies were included in this review. Six studies were judged as near-misses as they were "borderline cases", excluded because they either did not delineate residential care from other care settings in their analysis (Drapeau, Saint-Jacques, Lépine, Bégin, & Bernard, 2007; Kagan, Douglas, Hornik, & Kratz, 2008; Kagan & Spinazzola, 2013), used a negative measurement of resilience (Lodewijks, de Ruiter, & Doreleijers, 2010) or did not coherently conceptualise or measure resilience (Lietz, 2004, 2007).

3.2 Study quality

All included studies were reviewed and scored by two reviewers based on the quality assessment tool. Both reviewers agreed on the final grading results, following the SIGN scoring system (Guyatt et al., 2008), thus classifying the quality of evidence according to four levels: high (two points), moderate (one point), low and very low (zero point). Thus, an overall score of 16-20 was considered high quality, 11-15 was considered moderate, 6-10 was considered low and 0-5 was considered very low quality. Eleven studies were assessed as above moderate. Two studies (Collin-Vézina, Coleman, Milne, Sell, & Daigneault, 2011; Malindi & Machenjedge, 2012) were rated as overall low quality, only one point away from the moderate level. Three studies (Pat-Horenczyk, Shi, Schramm-Yavin, Bar-Halpern, & Tan, 2015; Quisenberry & Foltz, 2013; Vorria, Ntouma, & Rutter, 2015) were assessed with high quality on overall quality scores (Supplementary Table B).

Only one study did not mention any information about how data was collected, other studies all gained some points in relation to data collection (Quisenberry & Foltz, 2013). Three studies reported successfully addressed bias and attrition in their sampling strategy (Supplementary Table B), with sampling rates of eligible populations ranging from 55% to 67% (Altshuler & Poertner, 2002; Quisenberry & Foltz, 2013; Vorria et al., 2015). A further three described sampling strategies and reported samples as representative, but without further specification (Maurović, Križanić, & Klasić, 2015; Novotný & Křeménková, 2016; Go, Chu, Barlas, & Chng, 2017). Other studies did not report opt-in or attrition rates.

3.3 Characteristics of studies

All studies received above moderate scores in quality of study characteristics. Ten studies employed a quantitative design, and of these, all but two (Butler & Francis, 2014; Sim, Li

& Chu, 2016) were cross-sectional designs. Three studies (Malindi & Machenjedge, 2012; Nourian et al., 2016; Pat-Horenczyk et al., 2015) employed qualitative methodology, one a quantitative methodology (Maurović et al., 2015), and one (Pat-Horenczyk et al., 2015) employed a mixed-methods design, incorporating qualitative and quantitative methodologies. Two studies were follow-up studies (Sim et al., 2016; Vorria et al., 2015). The first (Sim et al., 2016) used a convenience sample as part of a larger sample in another cross-sectional study (Liu et al., 2014). The latter (Vorria et al., 2015) was based on an original study (Vorria et al., 2006), although the original research did not meet the inclusion criteria for this review.

All but one of the studies (Table 1) were conducted in highly developed countries (DCs), including Israel, the United States, Singapore, Portugal, Greece, Croatia, Czech Republic, Netherlands and South Africa ("The World Factbook — Central Intelligence Agency," n.d. note: South Africa has been dropped from the DCs list recently, although it was considered a developed country when Malindi and Machenjedge conducted the study in 2012), the exception being Iran (Nourian et al., 2016).

3.4 Sample population

We identified a combined sample of $n = 983$ children and adolescents, who had experienced or were experiencing residential care from infancy to 19 years of age. Residential settings included group home or institutions, residential treatment, shelters for former street children and a residential baby centre. One of the studies employed a population of children, ranging from 11 months to 3 years 5 months, kept in an infancy residential care centre and later adopted (Vorria et al., 2015). This sample was assessed when the children were 13 years old. All

studies contained both female and male samples, except for one study (Malindi & Machenjedge, 2012) that considered only male. Six studies specified the multi-ethnic composition with Caucasian samples predominating but African American, Malay, and Romany youths also being represented. One study did not report participants' ethnicity (Maurović et al., 2015). Other ethnic groups that were mentioned and measured in these studies included Hispanic, Aboriginal (Canada), Caribbean, Mediterranean, Chinese, and mixed ethnicities (see Table 1 for details).

Adolescents in residential care were reported to be more vulnerable and demonstrated more problems than the general youth population on self-report scales assessing resilience and health (Altshuler & Poertner, 2002; Butler & Francis, 2014; Collin-Vézina et al., 2011; Sim et al., 2016) including low levels of self-esteem, emotional comfort, psychosocial stability, work performance, poorer peer influences and higher rates of abuse and neglect. When compared with other types of alternative care (Sim et al., 2016), adolescents in residential care were reported to have higher baseline needs and suffered more types of interpersonal trauma, but with fewer prior placements and higher baseline strengths (resilience) than adolescents in other care settings. Sim, Li & Chu's (2016) longitudinal design revealed significant differences between foster family based and residential care based adolescents: the former expressed lower levels of needs as their strengths score increased, whilst in adolescents in residential care higher levels of strengths was positively associated with higher levels of need. Vorria et al. (2015) found that adolescents adopted out of early residential care (within, on average, the first 20 months of life), later showed no significant differences from typically-raised peers in positive predictors of resilience (quality of attachment, cognitive performance). These findings suggest

that keeping adolescents in residential care longer-term is associated with a reduced resilience-associated benefit, but that longer-term gains do accrue from achieving family-based permanence in adolescents with early residential care experience.

3.5 Conceptualisation of resilience

Most studies conceptualised and measured resilience directly, whereas two of the included studies used other variables representative of resilience: self-regulation (Pat-Horenczyk et al., 2015), and strengths, conceptualised as multiple protective factors (Sim et al., 2016). Go et al. (2017) described resilience as strengths and the capacity to apply them, but also external resources including educational support and family relationships. Novotný & Křeménková (2016) conceptualised resilience as education, physical and psychological care, whereas Maurović et al. (2015) conceptualised resilience as a dynamic process encompassing positive adaptation and facilitated by a series of protective factors or mechanisms, including individual and familial resources and relationships with professional staff and friends in a residential setting. The more recent studies showed agreement about an ecological conceptualisation in which resilience is facilitated by individual and systemic protective characteristics. This was reflected in those papers that broke resilience down into sub-domains (Altshuler & Poertner, 2002; Collin-Vézina et al., 2011; Pienaar, Swanepoel, van Rensburg, & Heunis, 2011; Quisenberry & Foltz, 2013; Davidson-Arad & Navaro-Bitton, 2015).

An ecological conceptualisation of resilience was implied in many of the studies, with reference to individual (internal stable and dynamic characteristics), environmental (e.g. school, community policies) and interpersonal domains. These domains, outcomes and possible correlates were operationalised in various ways. To facilitate synthesis of the

conceptualisations and variables of significance, we devised a framework (see Fig. 2) describing the resilience concept and operationalisation (factors), impacts upon resilience and correlates (or outcomes where a longitudinal design has been employed). Of note, there is significant cross-over. For example, problem-solving ability is described as part of resilience, a correlate of resilience and an outcome of resilience, reflecting the difficulties setting clear parameters around the resilience construct. Apart from age and gender, impacts upon resilience were all external: contextual, interpersonal or life events. By contrast, correlates of resilience were all internal factors, grouped by us into four areas: positive internal attributes, future vision, moral compass and self-regulation. For the latter three groups, the role of significant others in fostering these capacities is implied. The latter three groups recur in correlates and outcomes alongside wellbeing, developmental and interpersonal gains.

(Insert Figure 2 here)

3.6 Measurements of resilience

Resilience was measured by a variety of instruments, including self-report questionnaires: The Child Health and Illness Profile-Adolescent Edition (Starfield et al., 1994), as cited in Altshuler & Poertner, 2002), the Resiliency Scales for Children and Adolescents (RSCA; Prince-Embury, 2008, as cited in Butler & Francis, 2014), the Child and Youth Resilience Measure (CYRM; Ungar et al. 2008, as cited in Collin-Vézina et al., 2011), the Resilience and Youth Development Module (RYDM; California Healthy Kids Survey, 2003), as cited in Davidson-Arad, B & Navaro-Bitton, 2015), the Resilience Scale (RS; Wagnild & Young, 1993 as cited in Mota & Matos, 2015; Nourian et al., 2016), the Adolescent Resiliency Questionnaire (ARQ;

Gartland, Bond, Olsson, Buzwell, & Sawyer, 2011, as cited in Quisenberry & Foltz, 2013) and the Protective Mechanisms among Adolescents in Residential Care Questionnaire (PMARQ; Maurović et al., 2015), designed *ad hoc* for the purpose of the study.

Two studies (Go et al., 2017; Sim et al., 2016) assessed resilience using part of an instrument, the Child and Adolescent Needs and Strengths tool (CANS; Lyons, Weiner, Lyons, & Maruish, 2004), that was originally designed to measure a different variable. The CANS integrates information from multiple sources (Lyons et al., 2004). This type of assessment is more reliable than single-source self-report measures. Most of the studies included in this systematic review used accurate, valid, and reliable measures aimed at capturing a specific definition of resilience. However, there was no dominant measure, and consequently it isn't possible to recommend a "gold standard" assessment tool, based on our sample.

[Table 1 about here]

3.7 Associations between resilience and psychosocial outcomes

Higher levels of resilience were associated with better outcomes or performance, including higher levels of positive development (Quisenberry & Foltz, 2013), a more pro-social orientation (Malindi & Machenjedge, 2012), better wellbeing (low to moderate association) (Mota & Matos, 2015) and higher positive coping strategies, as well as lower general distress (Pat-Horenczyk et al., 2015), improved academic performance (Novotný & Křeménková, 2016), reduced risk of anger or conduct problems (Go et al., 2017), and higher self-reported happiness (Maurović et al., 2015).

4. Discussion

This review analysed 15 studies focused on the resilience of children and adolescents in residential care. Resilience was variously and multifactorially conceptualised, as we anticipated, reflecting the continued absence of a dominant measure or method. Whilst resilience conceptualisation was not always clearly explicated, all studies included in this review either conceptualised or measured resilience on a strengths basis. These conceptualisations and study variables were synthesised to produce a model of resilience characteristics and correlates/outcomes. This model reflects the available evidence and demonstrates that external factors are incorporated into research, but that resilience as a fundamentally internal attribute remains a popular, if not reductive, conceptualisation. Thus, we found measurement of individual and contextual features associated with resilience development in young people who have experienced severe adversity and who are being accommodated in residential units rather than family-based alternative care.

Whilst baseline wellbeing was typically lower than for other care-experienced populations, there was evidence of ample opportunities to foster resilience growth in residential care settings. Controllable factors such as making caring and interested adults available, providing educational support, and fostering a sense of a future and motivation towards that future were all found to contribute to positive outcomes. Mentoring is one way of providing this support with evidence of positive impact on developmental outcomes including mental health, educational attainment, peer relationships, and placement outcomes (Duke, Farruggia, & Germino, 2017).

4.1 Quality and limitations of the studies

The strengths of included studies were the appropriate study design, valid methodologies, and clearly explained results. Each study had a strong focus on youths in residential care. Five of them employed a comparison group (Butler & Francis, 2014; Davidson-Arad & Navaro-Bitton, 2015; Go et al., 2017; Novotný & Křeménková, 2016; Sim et al., 2016; Vorria et al., 2015), so that differences between groups and within individuals could be measured. We found a wide range of measures, including *ad hoc* measures (Maurović et al., 2015) and non-replicable interview approaches. Reporting limitations were evident with reliability and validity information missing in some cases. Collating these measures provides a useful overview for prospective researchers, and we hope to see a smaller number of measures emerge as consistently reliable and valid in relation to current conceptualisations of resilience.

Although most studies were carried out in developed countries, the sample variety of this review was still strong, as studies on adolescents from different cultural and ethnical backgrounds (e.g. Singapore, South Africa, Western Europe) were included, making the results more reliable and easier to generalise. However, small sample sizes reduced the generalizability of some findings. This may be due to the scale and type of residential care provision in different countries, and reflects a global move away from large-scale institutions towards smaller group home settings. A recommendation for reporting is clear explication of the setting and population to allow international comparison – the wide variety in intervention frameworks, policies, and terminology introduces significant challenges for evidence synthesis.

The variety of study designs (e.g. qualitative studies) increased the difficulties in evaluating resilience and the results. Measurement of baseline resilience should be prioritised in future studies, and there is a clear need for more long-term longitudinal data collection. The

preponderance of cross-sectional research allows for preliminary hypotheses about the longer-term effects of resilience factors on development and wellbeing, but empirical evidence is needed to test these.

To ensure quality, dissertations that had not been subsequently published in peer-reviewed journals were excluded, regardless of the quality or the value of the study itself. Applying an age limit ensured some homogeneity, but resulted in two near-misses (Hass & Graydon, 2009; Jackson & Martin, 1998). Such limits are necessary but inevitably restrict the findings.

4.2 Implications

Given the apparent importance of resilience as a multicomponent construct associated with better outcomes for this vulnerable population, focusing on resilience-building and, potentially, tolerating associated risks, should be a priority for residential care services. There is some mixed fledgling evidence with small samples of resilience-focused intervention and service design for this settings such as Building Emotion and Affect Regulation (BEAR; Pat-Horenczyk et al., 2015), Real Life Heroes (RLH; Kagan et al., 2008; Kagan & Spinazzola, 2013), a strength-based approach based on social learning (Lietz, 2004, 2007), and a writing based intervention to elaborate trauma (WRITE ON; Greenbaum & Javdani, 2017). Whilst Lietz's intervention has no reported outcome data and Real Life Heroes has demonstrated benefit in reducing trauma symptoms only (reflecting its intervention focus), BEAR and WRITE ON have demonstrated medium effect sizes on resilience, coping and emotional regulation measures. The mixed outcomes may reflect the need to incorporate more systemic elements into

resilience-building interventions, and to ensure conceptual clarity. A priori, theory, intervention and measurement should be aligned, and this requires particular attention when addressing such a diversified construct as resilience. The findings of this paper provide a basis for developing further resilience-focused programmes and service design for children and young people in residential care settings.

From a policy perspective, the role of significant adults in the child's world and the positive influence they can have on outcomes highlights the need for adequate staffing levels, high-quality training and ongoing supervision to engage with and build reparative relationships with children and young people who, by virtue of their early experiences, may be avoidant or destructive in close relationships (Morison, Taylor & Fawns, in prep.). These adults include residential care staff but also education staff and those working in community organisations to ensure a network of support and opportunity for the young person that allows them to develop a sense of motivation and vision for their own future. Lastly, as policy increasingly recommends support beyond the age of 18, future research should investigate correlates, contributors and outcomes for resilience in young adults during and after they leave the residential care setting. This would also further our understanding of the long-term impacts of resilience-promoting practice during childhood and adolescence.

Finally, there were reporting issues in many of the studies included in this review, suggesting that even when the research methodology was robust, reporting standards had not been followed. In a field that is inherently heterogeneous in terms of population definition and resilience conceptualisation and measurement, maintaining consistent research reporting

standards is one way of facilitating sufficient homogeneity to allow synthesis of findings in reviews, such that theory and empiricism can progress.

5. Conclusion

The results obtained from this review were found mainly in developed countries, where residential care is part of a comprehensive system of alternative care for children and adolescents. The main findings suggested that adolescents who have been cared for in residential settings are more vulnerable and demonstrated more problems when compared to adolescents who have not been in residential care (e.g. adolescents in foster care or kept at home). Although no single definition of resilience was found, suggesting that resilience can be understood and conceptualized from different angles and perspectives, the association with positive features understood as protective factors, was demonstrated in this review. Among them, those aimed at promoting interpersonal relationships (e.g. school engagement and significant figures) and development of a future focus and motivation were particularly noticeable.

This review summarised studies on resilience in adolescents within residential settings and made suggestions for future studies looking at resilience in this specific group. It highlights the need for clinicians, policy makers and other professionals to allocate more resources and time to building the strengths of adolescents in residential care settings to help them achieve and maintain long term positive outcomes.

5179 words

Conflicts of Interest

This was an unfunded piece of research and there are no conflicts of interest to declare.

ACCEPTED MANUSCRIPT

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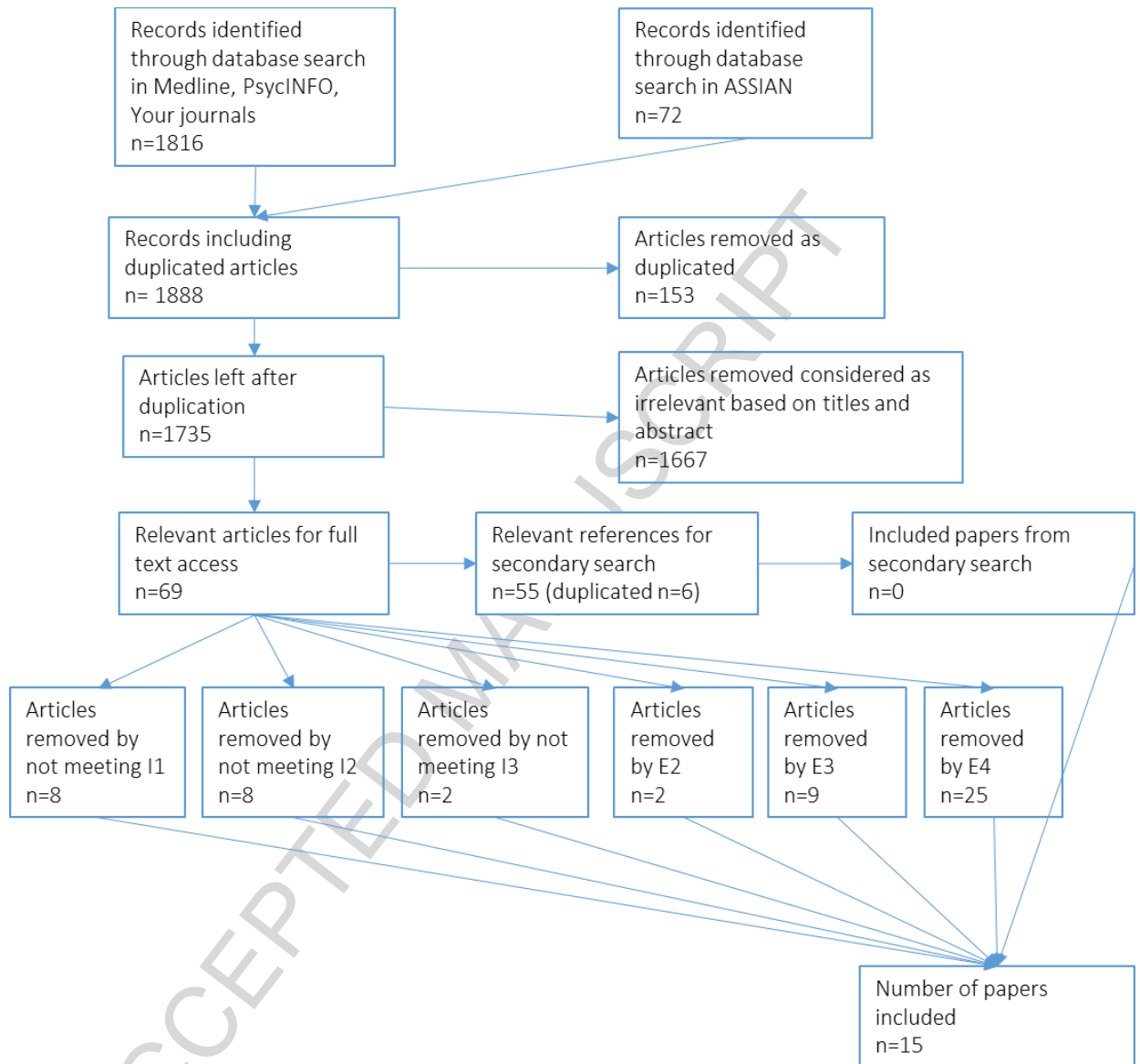
Figure 1: PRISMA flowchart detailing study selection

Figure 2: Resilience in Residential Care

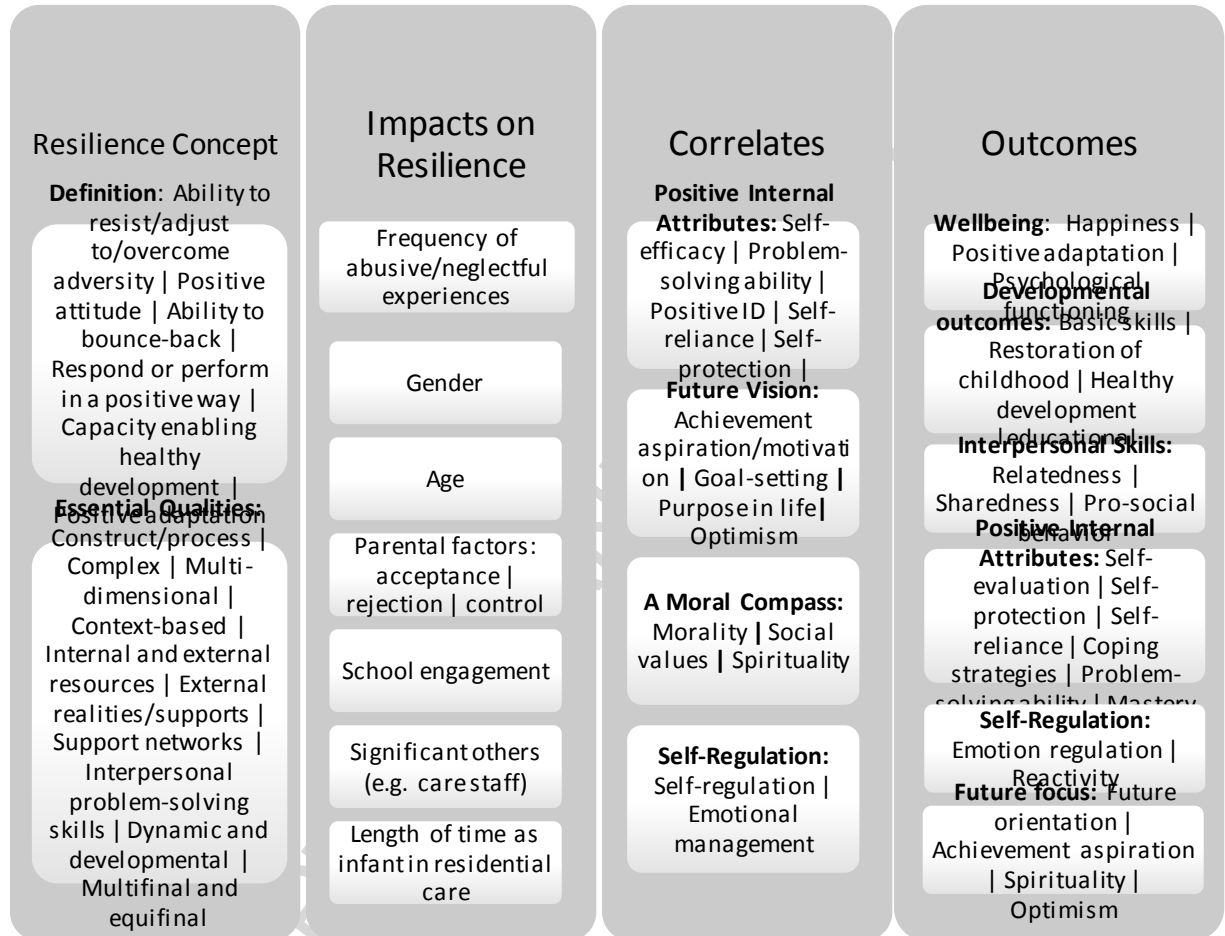


Table 1. Study Characteristics and Description of Results

Author, Year, Location	Study design, time-points, definition of resilience	Sample Characteristics: N, Age, Gender (m=male)	Resilience Measure	Main Findings (compared to control, where relevant)
Altshuler & Poertner (2002) U. S. A.	Randomised Controlled (general youth population) Cross-sectional	n=63 (Control: normed ref group n = 867): 12 - 19 yrs, M =16; m = 45(71%),	CHIP-AE	High resilience (problem-solving skills) (t = 2.12, p ≤ 0.05), home safety and health (T = 3.60, p < .01).; Low family involvement (t = -3.75, p ≤ 0.01); Similar Physical activity (T = 0.10, ns)
Butler & Francis (2014) U. S. A.	Longitudinal (5 years) Controlled Cohort (clinical residential v. non-clinical community services)	N = 232 enrolled in 5 programs 9 – 19 yrs, median = 14; residential treatment: n = 64, m=45 (70%),	RSCA	Higher reactivity [t (230) = -5.34, p < .0005] and vulnerability [t (231) = -2.96, p = .004]; Otherwise similar

		median = 15 yrs; community based program: n = 168, median age = 14, m = 99 (59%)		
Collin-Vézina et al. (2011) Canada	Cross-sectional, quasi- experimental, exploratory	N=53 from six residential care units: 14 – 17 yrs, M =15.5; m = 29 (55%),	CYRM	Lower individual (F(4, 49).=3.93, p<0.01;; relational (F(4, 49).=5.43, p<0.001), and community (F(4, 49).=4.69, p<0.01) resilience features associated with multiple forms of trauma
Davidson- Arad & Navaro-Bitton (2015) Israel	Cross-sectional	N=286, 13-17 yrs, M=15 yrs : maltreated from foster care: n = 63, M age= 15.5, SD =	RYDM	Girls showed greater resilience: general resilience (F(2.276) = 5.832, p = .05); internal resilience (F(2.276) = 5.832, p = .05); external

		1.55; residential n = 71, M age = 15.22, SD = 1.79; community care (n = 52, M age = 15.2, SD = 1.69.		resilience ($F(2.276) = 9.205, p = .01$).
Go, Meng Chu, Barlas, & Chng, (2017) Singapore	Cross-sectional	N=130 adolescents from 11 Voluntary Children's Homes (VCHs) (Age NR) m=46.8%	CANS	Resilience significant predictor in anger control problem ($\beta = -1.14, SE = 0.31, OR = 0.32$) and conduct problem ($\beta = -0.89, SE = 0.32, OR = 0.41$); Educational support also significant predictor ($\beta = -0.81, SE = 0.41, OR = 0.45$).
Malindi & Machenjedze, (2012)	Qualitative (Case report); exploratory focus	N = 17 male street children living in	focus group transcribed interview	School engagement strengthened resilience by promoting pro-social

South Africa	groups	shelters; 11-17 yrs.		change, future orientation, opportunities for support, learning of basic skills and restoration of childhood.
Maurović, I., Križanić, V., & Klasić, P. (2015) Croatia	Cross- sectional	N = 118 youths placed in community residential home, Mage = 16.47, SD = 1.21; m= 74% , f = 26%	LMLES ESAR PMARQ SHS	Everyday stress and all protective mechanisms (e.g. individual resources, caring relationships with staff and friends) but not caring relationships with family members were correlated ($r = .32- .44$, $p < .05$) with the level of self-reported happiness. Number of life events and everyday stressors predicted self-reported

				happiness, accounting for 5.9% of the variance. Once protective factors were included, they explained 15.6% of the happiness levels.
Mota & Matos (2015) Portugal	Cross-sectional	N=246 in institutions, 12-18 yrs, median = 14.87, m = 114 (46.3%).	RS	Resilience partially mediated the association between quality of sibling relationship and self-concept ($\beta=.226$), reducing the direct effect from $\beta=.37$ to $\beta=.13$ (all $p<.001$).
Nourian et al. (2016) Iran	Qualitative; hermeneutic; phenomenological	N=8 in governmental residential care facilities, 13-17 yrs, m=5	Persian version of RS	Themes included: going through life's hardships, aspiring for achievement, selfprotection, self reliance, and spirituality

Novotný & Křeménková, (2016) Czech Republic	Cross-sectional	N=467 from 35 children's homes: residential care (Romany): n=95, M age = 15.76, SD = 1.58; residential care (Caucasian): n=182, M age = 16.49, SD = 1.62; control: n=190, M age=17.08, SD = 1.02	CYRM, RSCA, YSR	Resilience accounted 24% of variance in academic performance (Adj. $R^2 = .23$, $F = 12.09$, $p < .001$, considering the following predictors: CYRM Context: Education, Relationships with caregivers, Psychological care, Physical care and RSCA Emotional Reactivity,) and Length of stay
Pat- Horenczyk et al. (2015) Singapore	Case-series; pilot intervention; mixed-method	N = 73 from 5 residential group homes: 7-13 yrs, M = 10.53, m=33	Bespoke measure	Increase in emotion regulation, ($p < 0.001$, Cohen's $d = 0.437$) and positive coping ($p =$ 0.003 , Cohen's $d =$

		(45%)		0.389), sig. decrease in general distress ($p = 0.036$, Cohen's $d = 0.266$).
Pienaar et al. (2011) South Africa	Qualitative; multi-perspective analysis; qualitative; exploratory	N = 8 HIV-infected or -affected orphans in a residential care facility, 9-13 yrs, m:f ratio NR	N/A	Resilience fostered through: external stressors and challenges, external supports, inner strengths, interpersonal and problem-solving skills.
Quisenberry & Foltz (2013) U. S. A.	Cross-sectional	N = 42 from 5 residential treatment centres, 13–18yrs, M=16, m = 27	ARQ, CoC, ACEs	Correlation between resiliency and positive youth development ($r = .734$, $p < .01$); Internal Resiliency sub-scale had the strongest correlation ($r = .55$, $p < .01$).

Sim, Li, & Chu (2016) Sub- sample of Liu et al., 2014; Singapore	Cohort (longitudinal 1 yr)	N=285 in out- of-home care: 5-17 yrs, M=9.53, m = 145 (49.1%): Non-kinship foster home: n=153(54%); residential group homes n = 132(46%);	CANS (strength domain)	<p>After controlling for covariates, higher baseline strengths (factors enhancing resilience) predicted lower baseline life functioning (LF) needs ($\beta = -.39$), school needs ($\beta = -.045$, both $p > .001$) and behavioural and emotional needs ($\beta = -.017$, $p < .05$), regardless of placement settings.</p> <p>At 1yr FU, baseline strengths predicted higher LF needs only in residential care, reflected in placement x strength interaction effect ($\beta = .14$, $p < .05$).</p>
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Vorria, Ntouma, & Rutter (2015) Follow-up from Vorria et al., 2006 Greece	Cross-sectional; FU	N=52 living in a Greek residential baby center, adopted at 20 months (M) In adoptive group, m = 27, f = 25, Mage = 13.1, SD = 0.5 in comparison group, n = 36, m = 18, f = 18, Mage = 13, SD = 0.5.	CAI Greek WISC-III + teacher report of school performance	No significant differences.
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Legend:

ARQ = Adolescent Resiliency Questionnaire (Gartland et al., 2011); ACEs= The Adverse Childhood Experiences Questionnaire (Gartland et al., 2011); BEAR = Building Emotion and Affect Regulation; CAI: Child Attachment Interview (Target, Fonagy, & Shmueli-Goetz, 2003); CANS = Child and Adolescent Needs and Strengths CANS (Lyons, 2009: Singapore adaptation from Sim et al., 2016); CHIP-AE = Child Health and Illness Profile—Adolescent Edition (CHIP-AE) (Starfield et al., 1994); CoC = Circle of Courage (Brendtro & Larson, 2006); CYRM = The Child and Youth Resilience Measure (CYRM) (Ungar et al., 2008) (Ungar & Liebenberg, 2011); ESAR = The

Everyday Stress Among Adolescents in Residential Care; f = female; FH = Foster Homes; FU = follow-up; G = group; LMLES = The List of Major Life Events/Stressors; M = Mean; m = male; NR = not reported; MAS = Mastery Profile Scale; N/A = Not Applicable; PMARQ = The Protective Mechanisms among Adolescents in Residential Care Questionnaire; RYDM = Resilience was assessed using the Resilience and Youth Development Module-(RYDM); REA = Reactivity Profile Scale; REL = Relatedness Profile Scale; RI = Resource Index; RS = Resilience Scale (Wagnild and Young 1993; Portuguese adaptation); RSCA = Resiliency Scales for Children and Adolescents (Prince-Embury, 2006, 2007); Greek WISC-III Wechsler Intelligence Scale for Children (Georgas, Paraskevopoulos, Bezevegis, & Giannitsas, 1997); SD = Standard Deviation; SHS = The Subjective Happiness Scale (Lyubomirsky & Lepper, 1999); VCH = Voluntary Children's Homes; VI = Vulnerability Index; YSR = Youth Self Report (Achenbach, Rescorla, 2001); SE = Self-esteem

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Highlights

- Adolescents in residential care settings present more problems compared to their peers living in non-residential settings.
- Despite the lack of a single definition, resilience was consistently associated with protective factors in youths in residential settings.
- Among the factors used to operationalise resilience, interpersonal relationships and the development of a future focus and motivation were noticeable.
- These findings suggested the need for researchers, clinicians, and policy makers, to allocate more resources for the promotion of strengths in youth in residential care.