**Adult disinhibited social engagement (DSE) in adoptees exposed to extreme institutional deprivation: An examination of its clinical status and functional impact.**

Mark Kennedy PhD1,7, Jana Kreppner PhD 1, Nicky Knights PhD 2, Robert Kumsta PhD 3, Barbara Maughan PhD 4, Dennis Golm PhD 7, Jonathan Hill PhD 5, Michael Rutter MD 4, Wolff Schlotz PhD 6& Edmund Sonuga-Barke PhD 7\*

1. Developmental Brain-Behaviour Laboratory, Department of Psychology, University of Southampton.

2. The Amy Winehouse Foundation, London.

3. Department of Genetic Psychology, Faculty of Psychology, Ruhr-University Bochum, Germany.

4. MRC Social, Genetic & Developmental Psychiatry Centre, Institute of Psychiatry, Psychology and Neuroscience, King’s College London.

5. School of Psychology and Clinical Language Sciences, University of Reading.

6. Max-Planck-Institute for Empirical Aesthetics, Frankfurt am Main.

7. Department of Child & Adolescent Psychiatry, Institute of Psychiatry, Psychology and Neuroscience, King’s College London.

Correspondence: Edmund J S Sonuga-Barke, Department of Child and Adolescent Psychiatry, PO85, Institute of Psychiatry, Psychology and Neuroscience, 16 De Crespigny Park, London, SE5 8AF.

Email – [edmund.sonuga-barke@kcl.ac.uk](mailto:edmund.sonuga-barke@kcl.ac.uk)

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**Abstract**

**Background:** Early life institutional deprivation produces disinhibited social engagement (DSE). Portrayed as a childhood condition, little is known about the persistence of DSE-type behaviours into, presentation during, and impact on, functioning in adulthood.

**Aims:** We examine these issues in the young adult follow-up of the English and Romanian Adoptees study.

**Method:** 122 of the original 165 Romanian adoptees who had spent up to 43 months as children in Ceaușescu’s Romanian orphanages and 42 UK adoptees were assessed for DSE behaviours, neuro-developmental and mental health problems, and impairment between ages 22-25 years.

**Results:** Young adult DSE behaviour was strongly associated with early childhood deprivation, with a six-fold increase for those who spent more than 6 months in institutions. However, while DSE overlapped with autistic spectrum disorder and ADHD symptoms it was not, in itself, related to broader patterns of mental health problems or impairments in daily functioning in young adulthood.

**Conclusion:** DSE behaviour remained a prominent, but largely clinically benign, young-adult feature of some adoptees who experienced early deprivation.

**Key words:** disinhibited social engagement, attachment, institutional deprivation, Romanian adoptees, early adulthood.

**Introduction**

Adversity, experienced early in childhood, can create deep psychological and neuro-biological vulnerabilities.1 In this regard, institutional care settings pose rather particular risks and have distinctive effects on development.2 In such settings there may be limited personalised care, restricting the chance for children to develop close, stable and loving relationships with individual carers.3 There may also be a lack of linguistic and intellectual stimulation.4 In more extreme cases, nutrition and hygiene are compromised.3 The effects of these institutional exposures can be seen in subsequent elevated rates of neuro-developmental disorders and mental health problems – with more severe institutional deprivation associated with worse outcomes persisting into adulthood.5

Some of the difficulties observed in previously institutionalised individuals represent deprivation-related variants of more general, common childhood problems (e.g. attention-deficit/hyperactivity disorder; [ADHD],6 autism spectrum disorder [ASD]7 and behavioural and emotional problems.8 In contrast, disinhibited social engagement [DSE; APA, DSM-5]9 is a diagnosis restricted to individuals who have experienced institutional deprivation or other forms of gross early social neglect. It presents as an inappropriate over-familiarity with, and lack of wariness of, strangers, and a failure to observe appropriate physical and verbal boundaries during social interaction. For example, it can involve an inappropriate seeking out of physical proximity and/or asking overly intrusive and overly familiar questions.10,11 Within the social ecology of poor quality care in institutions, DSE behaviours may be adaptive - they may fulfil a need for social intimacy and increase access to care from staff12. However, post-institutionally they represent a potential source of vulnerability and impairment.13 Individuals with DSE may be perceived by peers as tiresome and/or hostile, and the indiscriminate nature of their social behaviours may undermine friendship development.14 Their overly trusting nature may increase risk of exploitation within dysfunctional relationships.11

DSE is considered a condition of early childhood and while recent evidence suggests that DSE can persist into later childhood and adolescence,15-18 little is known about its long-term persistence into adulthood.19 To address this point, we have recently reported childhood-to-adult developmental trajectories for DSE behaviours in the English and Romanian study cohort 20 of individuals who suffered extreme early deprivation in the institutions of the latter years of the Ceaușescu regime, before adoption into UK families.5 Perhaps against expectation, DSE behaviours showed strong persistence into adulthood alongside more expected persistence of ASD and inattention/overactivity (I/OA; representing a subset of symptoms of attention-deficit/hyperactivity disorder) symptoms– 35% of young adult adoptees who experienced deprivation for longer than the first 6 months of life displayed evidence of DSE behaviours compared to 6% in a comparison group of UK adoptees.

In the current paper, we extend this initial analysis of the persistence of DSE behaviours. Our aim is to address the following questions. What are the characteristic features of the young adult DSE presentation in individuals who have suffered early deprivation? Can DSE behaviours still be directly observed? To what extent are affected adults aware of their own DSE behaviours? Do DSE behaviours overlap with continuing neuro-developmental disorders? Does young adult DSE impact social functioning, mental health, service use, and quality of life (QoL)? Given prior findings we predicted that DSE behaviours would persist into adulthood but be less observable than at younger ages and affected individuals would show some awareness of their own tendency towards DSE. We also predicted that DSE behaviours would be associated with impaired social functioning and reduced QoL.

We were also interested in exploring the relationship between DSE behaviours and parent-child relationships – especially their link with attachment security in adulthood. This is of interest because the DSE pattern was initially conceptualised in terms of attachment. However, against this view, DSE has since been shown to persist even after the formation of secure attachment relationships.11 Our own earlier data suggest that the core of the DSE pattern is linked to unmodulated and indiscriminate social behaviours with relative strangers rather than a lack of selectivity of attachment behaviours with regard to carers. At age 6, for instance, there was only a weak negative association between DSE and attachment security; 53% of those displaying DSE were coded as secure compared with 79% of those without the DSE pattern.11 As a result of this Rutter et al21 concluded that the DSE pattern should not be conceptualised as an attachment disorder – a view consistent with the work of Zeneah and colleagues10, and the eventual designation of DSE as a separate disorder in DSM-5.9

**Methods:**

**Participants:** One-hundred-sixty-five Romanian (91 females), and 52 UK adoptees (18 females -no deprivation history) and their adoptive families entered the study in the mid-1990s. In the UK group data were available for 47 (90%), and 39 (75%) individuals in adolescence and in young adulthood, respectively. In the Romanian group these figures were 148 (90%), and 107 (65%) individuals, respectively. The average age at young adult assessment was 23.2 (UK) and 23.6 years (Romanian). A comparison of age 15 characteristics of those that dropped out in young adulthood and those that remained in the study provided no evidence of selective attrition. The proportion of UK and Romanian cases was similar at the two ages and there was no difference between those remaining in the study at the young adult follow up and those dropping out in terms of sex of child, age, IQ or the proportion of cases with deprivation-related problems at age 15 years (data available from authors). 18.4% of the retained sample met the criteria for DSE while 21.6% of those who dropped out did. This difference was non-significant (*p*=.648).

**Measures**

**Disinhibited Social Engagement (DSE)**

The assessment of DSE behaviours was based on interviewers’ ratings of parents’ answers based on three codes used at previous assessment waves.18,7,11 These were; (i) *too friendly with strangers or too eager to approach strangers;* (ii) *makes very personal comments or asked intrusive questions of others they’ve just met;* and (iii) *unaware of social boundaries, or the closeness of interaction with unfamiliar people*. Two additional questions were included in the young adult assessment: (iv) *excessive self-disclosure* and (v) *not stranger-aware*. A rating between 0-2 was made – with 0 representing “no evidence of disinhibition” and 2 “definite evidence of disinhibition”. Inter-rater agreement in adulthood was high, with a mean intra-class correlation of .91 (range .81 to .97). Interviewers blind to prior DSE status also directly observed the adoptees’ behaviour during their assessment visit for evidence of the following: (i) *social disinhibition*, (ii) *inappropriate physical contact*, (iii) *inappropriate/intrusive comments*, (iv) *violation of physical social boundaries* and (v) *violation of verbal social boundaries*. Ratings were made using the same coding scheme as for the parent-based ratings.

Self-awareness of their DSE behaviours by young adults was assessed using specific DSE items from the Social Emotional Functioning Interview22. These items were: general social disinhibition with others; a lack of the concept of friendship; an inability to differentiate between friends and non-friends; a lack of awareness of any problems with peers/others; and a lack of the concept of loneliness. Items were rated on a 3-point scale (0 to 2) with the higher rating reflecting definite difficulty. Difficulties were deemed present when any item was positively endorsed at the level of 1 or 2 (i.e., some or definite). Given the non-specific nature of social difficulties, this scale had reasonable internal consistency (α =.58). This scale also had high inter-rater reliability between two raters on a randomly selected 20% sub-sample, with an average kappa of .890 (range .71 to 1). Further information on individual items used available upon request from the authors.

**Co-occurring young adult developmental and mental health problems**

**ADHD, conduct and mood problems:** ADHD (18 items),generalised anxiety (13 items), major depression (15 items) and conduct disorder (CD; 14 items) symptoms were assessed using the Conners Behaviour Rating Scales (CBRS) using standardised T-scores.23 ADHD assessment was based on parent report while the other outcomes were based on self-report, in line with established guidelines.24 Callous unemotional (CU) traits were measured using the parent report Inventory of Callous-Unemotional traits,25 which measures the affective personality features of psychopathy. It contains 24 items assessed on a 0-3 point rating scale with higher scores reflecting increased levels of callous-unemotional traits. The ICU had good internal consistency (α =.90).

**Autism Spectrum Disorder (ASD):** The Social Communication Questionnaire (SCQ)26 is a parent-completed and clinically validated 35-item screen for ASD symptoms that maps onto DSM diagnostic criteria. To ensure its developmental appropriateness in young adulthood our analysis was based on a 15-item version with five items from each scale (social reciprocal interaction; communication and repetitive and stereotyped behaviours)5. Items were rated as either 0 for “No”, or 1 for “Yes”. This revised 15-item scale demonstrated high reliability (α=.88).

**IQ**

A shortened version of the WASI (two-subscale (vocabulary and block design) version)27 was administered in early adulthood.

**Clinical service use**

Information about lifetime history of clinical service use was gathered from parents and young people during interviews at ages 6, 11, 15 years and during the young adult follow-up.

**Young Adult-Parent Attachment Security**

Young adults’ attachment was measured using the Parental Attachment Questionnaire (PAQ)28 and the Inventory of Parent and Peer Attachment (IPPA)29 – validated in this age group.30 PAQ has three sub-scales: affective quality (27 items), facilitation of independence (14 items) and support (13 items), with items rated on a scale of 1 to 5. In the present sample, scale reliability was high for each sub-scale (α=.96, .90 and .85, respectively). IPPA is a 25-item measure of mother- and father-child attachment. Items are rated on a scale of 1 to 5, with higher scores indicating greater attachment security. Both mother and father attachment subscales showed high scale reliability in this sample (α=.97 and .96, respectively).

**Quality of Life (QoL)**

Participants self-rated QoL using the five item Satisfaction with Life Scale31 (1- Strongly Disagree, to 5 – Strongly Agree). They reported whether they (i) see their current life as ideal; (ii) are satisfied with life; (iii) would live life again in the same way; (iv) find life excellent and; (v) think they have secured the important things in life. This scale had high internal consistency (α =.90).

**Functioning within different social domains:**

Social functioning was assessed with the work, romantic relationships, friendships, non-specific social contacts and coping sub-scales of the Revised Adult Personality Functioning Assessment (RAPFA)32, each on a scale of 1-9 – where a score of 3 or more represents the presence of dysfunction.33 Inter-rater reliability was high, with intra-class correlations ranging from .78 to .96, based on a randomly selected 20% of the whole sample. Participants were grouped as 0 for “no significant dysfunction” or 1 for “evidence of significant dysfunction”.

**Education and employment status**

Key indicators of young adult functioning were derived from young adult and parent reports. These were (i) currently being unemployed and (ii) having lower educational achievement (i.e., GCSEs or less). These were coded in a binary form (0 doesn’t apply, 1 applies).

**Adoptive family demographics:**

Adoptive family SES was based on data on parents’ occupation at the age 15 follow-up.20 Families were divided into high and low SES groups based on the Registrar General’s classification.34 Manual and unskilled occupations were classified as low SES and skilled, managerial/ technical and professional occupations as high SES. Parental marital status was derived from parental reports made at young adult follow up to create a binary code (marriage intact = 1; original adoptive parents divorced, separated or widowed = 0).

**Statistical analysis**

First, we used correlational analysis to examine the structure of parent-rated young adult DSE. Second, we used 2 and Fisher’s exact tests to examine the relationship between deprivation and DSE. As in previous papers we divided the Romanian adoptees into two groups - those who had experienced less than 6 months deprivation (Rom<6) and those who experienced between 6 and 43 months deprivation (Rom>6). This was based on evidence for a step increase in risk between 6 and 12 months of deprivation exposure and the finding of equally low risk of problems in the UK and the Rom<6 groups.35 These groups were compared in terms of the proportion of cases with a score of 1 (probable DSE) for each of the five parent-rated items. Third, we estimated the proportion of cases meeting criteria for DSE based on interviewer coding of parent interviews using thresholds equivalent to those used in previous studies.11 More specifically, DSE was deemed present if an individual had two or more positive endorsements (a score of either 1 or 2) from the five items. These proportions were then compared across the three groups. Fourth, we split the Rom>6 group into those with and without DSE (DSE- versus DSE+) and then validated this DSE categorization against (i) interviewer observations and (ii) self-ratings. For these measures, separate binary outcomes were created so that those with no self-reported or observed disinhibition could be compared with those with at least one positive item. Fifth, we examined patterns of continuity between adolescence and young adulthood using Mcnemar’s statistical test, which compared the proportion of individuals meeting threshold at our two time points. Sixth, using the same group comparison we examined patterns of co-occurring neuro-developmental, mental health problems and clinical service use as well as quality of life, functioning within different social domains, employment and educational status. Seventh, where the above analysis revealed significant differences between DSE+ and DSE- groups we ran a series of multiple logistic regression analyses with other deprivation-specific problems (DSP; ADHD, ASD), CU traits and IQ entered as covariates to assess the extent to which poor outcomes were specific to DSE.

**Results**

The five parent reported adult DSE items were significantly inter-correlated (Spearman’s *r*s =.39 to .83) creating a single scale with high internal consistency (= .82). Figure 1 presents the proportion of positive DSE item endorsements for young adults within the UK, Rom<6 and Rom>6 groups. Adult DSE behaviours were strongly related to levels of prior deprivation. There were equally low rates of in the UK and Rom<6 groups (2 (1) = 0.07; *p* =.79), but they were significantly greater in the Rom>6 group compared to the Rom<6 group (2 (1) = 11.8; *p* = .001). Individuals in the Rom>6 group were 7 and 6 times more likely to meet our thresholds than those in either the UK (2 (1) = 11.8; *p* = .001) or the Rom<6 group, respectively (2 (1) = 12.1; *p* = .001). Furthermore, there was significant persistence of DSE behaviours, with 64% of those in the Rom>6 group meeting criteria for DSE at 15 also meeting criteria in young adulthood (McNemar; p = .79).

Given the similarity in terms of low parent-derived DSE levels in the UK and Rom<6 groups we then tested whether these groups differed in terms of self-rated and observed DSE behaviours: There were no significant differences (*p* = .054 and *p* = .34, respectively). The UK and Rom<6 groups were therefore combined for subsequent analyses into a low deprivation (LoDep) group. This group was then compared with the Rom>6 month group divided into DSE+ vs DSE- groups. Figure 2 compares these three groups in terms of observed and self-rated DSE behaviours. Rom>6 DSE+ had significantly higher levels of self-rated (61.7% vs 4.9%; Fisher’s Exact, *p* < .001) and observed DSE (41.2% vs 1.2%; Fisher’s Exact, *p* < .001).

Table 1 presents group differences in family demographics and levels of young adult co-occurring neurodevelopmental problems, mental health symptoms, clinical service use, educational attainment, employment status, functioning within different social domains, and QoL. There was no difference between the DSE- and DSE+ groups in terms of sex, SES or the intactness of the adoptive family. Levels of ASD and ADHD symptoms and CU traits and clinical service use were significantly greater in the Rom>6 DSE+ group than either the LoDep or the Rom>6 DSE- group. The same pattern was seen for clinical service use, lower educational attainment and unemployment. DSE+ and DSE- did not differ in terms of anxiety, depression or IQ. The groups did not differ in terms of QoL or RAPFA measures of functioning within any social domains.

Multiple logistic regression analyses, with service use, educational attainment and unemployment as dependent variables showed that associations of DSE with service use (Exp(B) = 1.52, *p* = .64), low educational attainment (Exp(B) = 2.55, *p* = .31) or unemployment (Exp(B) = 1.03, *p* = .97) all dropped to non-significant levels when ASD and ADHD symptoms, CU traits and IQ were added as predictors alongside DSE. Interestingly, the effects relating to service use were driven by the specific association with co-occuring ADHD symptoms (Exp(B) = 1.14, *p* = .011). For employment, IQ drove the association (Exp(B) = 0.91, *p* = .019). ADHD symptoms and IQ accounted jointly for educational performance; (ADHD: Exp(B) = 1.10, *p* = .035; IQ: Exp(B) = 0.92, *p* = .044). Lastly, DSE was not related to adult attachment security, whether measured via the IPPA or the PAQ (*p*s > .05; see Table 1).

**Discussion**

The term DSE has been used to describe an inappropriate, over-familiar and socially intrusive pattern of behaviour displayed by children who have suffered early social adversity – especially neglect.36 Past research has shown DSE to be at the core of a pattern of deprivation-specific problems observed in children and adolescents who have suffered institutional deprivation including those in the ERA study.7 In such individuals we recently reported the persistence of DSE behaviours into adulthood alongside ADHD and ASD symptoms.5 Here we present the first detailed characterisation of deprivation-related DSE behaviours in adulthood. There were a number of findings of note.

First, each of the five parent-reported young adult DSE descriptions were similarly elevated in individuals who experienced more than 6 months deprivation – including the new items “lack of stranger wariness” and “excessive self-disclosure” – items which extend the DSE construct in potentially important ways. In particular, an over-trusting nature and willingness to divulge private and confidential information could increase the risk of abuse and exploitation.

Second, high DSE status, established by pooling across interviewer codings of parent-derived information, was corroborated by investigator-based observations and self-ratings by the young adults themselves. This provided external validation of the young adult DSE construct. This is important because it is possible that parental descriptions could be conditioned by the child’s history of DSE behaviours rather than reflecting the current situation. The fact that specific DSE behaviours could be observed during a short interview session is quite striking given the expectation for social conformity in such situations. Noteworthy here is that none of the interviewers of young adults had visited participants in the past phases of the project. The evidence that individuals with DSE had insight into their own gregarious nature and open social inter-personal style is also potentially important – because self-knowledge can represent a necessary, though not sufficient, condition for the development of coping and defensive strategies that can reduce social risks.

Third, DSE behaviours still strongly overlapped with the two other core DSP features (ASD and ADHD symptoms), providing further evidence for the idea of a loosely configured deprivation syndrome as previously proposed by Rutter et al19. The fourth element of the original DSP cluster, cognitive impairment, was more weakly related to DSE than in the previous follow-up assessments – largely because in general individuals in the Rom>6 group displayed cognitive recovery by young adulthood with IQs in the normal range even for the most deprived.5 We also provide the first evidence that adult DSE behaviours overlap to a degree with CU traits. CU traits were examined in the sample for the first time at the adolescent follow up. We have recently reported that CU traits are also linked to ADHD in young adults who were exposed to early deprivation.6 These data together raise the possibility that CU traits might be a core feature of a deprivation syndrome alongside ADHD, ASD and DSE – at least in adulthood.

Fourth, and perhaps most strikingly, adult DSE behaviours appeared to be largely clinically benign. They were unrelated to both the development of anxiety and depression, despite the increase in these aspects of mental health problems observed between adolescence and early adulthood more generally5 and appeared not to impact significantly either functioning within different social domains or quality of life – at least as perceived by the young adults themselves. Where there were effects (on educational and employment status) it appeared that these were due to co-occurring neuro-developmental problems (particularly ADHD symptoms and low IQ), rather than to DSE itself. This lack of an association with impairment casts doubt on whether, at least in adulthood, DSE on its own should be considered a disorder as characterised in the DSM-5 revisions. It is even possible that certain features of disinhibited social behaviours may be beneficial in certain settings and occupations. Indeed, in discussion with the young adults with DSE it became clear that some of them had found a successful niche in jobs in for instance sales that exploited their “natural” openness and friendliness. Despite these specific examples, there was no suggestion in our current analysis that DSE had an overall positively protective quality in the face of co-occurring problems. There is one important caveat to the conclusion that DSE is benign – in our previous work, we have proposed that it is in combination with other deprivation-specific problems, especially ASD, that DSE becomes especially impairing. This question will be explored in future papers.

Finally, DSE was unrelated to both young adults’ own and their adoptive parents’ perceptions of attachment security. This is significant because initially DSE was cast clinically as an attachment disorder with its origins in the absence of appropriate attachment figures in institutions leading to later disrupted attachment behaviours.37 However, our data in the past suggested that the association between attachment security/insecurity and the DSE pattern was not so clear-cut.18,21,38 Specifically, over time, it became apparent that individuals with DSE were often also securely attached - although a somewhat lower proportion of children with DSE, compared to those without DSE, were rated as secure.11 To date, it is unclear whether persistence in DSE into young adulthood would impact negatively on parent-child attachment relationships. Our data suggest that there were no differences between those with DSE and those without it in the way the young adults, or their parents, perceived their attachment relationship.

This paper is the first to present a systematic characterisation of DSE behaviours in adulthood. It has a number of strengths including its prospective longitudinal nature, natural experimental adoption design and the stratification of deprivation-related risk (by duration) to increase statistical power. However, there are also a number of limitations that need to be considered when interpreting the findings. First, DSE was assessed by a limited number of items at each age. However, these appeared to be psychometrically robust and to capture important deprivation-related features that were validated by direct observation and self-reports. Second, attrition at the young adult assessment was higher than the very low rates seen at previous ERA follow-up assessments. This, although not surprising given the age range of the young adults, limited the statistical power of the analysis especially in the comparison of DSE+ and DSE- groups. However, attrition appeared to be non-selective in nature. Third, we had limited information on pre-institutional risks such as maternal smoking or stress exposures during pregnancy and these could have been elevated in the current sample. However, it seems unlikely that Rom>6 children would have been exposed to sufficiently greater risk prenatally than their Rom<6 counterparts, in part at least because the timing of adoption was largely determined by the fall of the Ceaușescu regime. Fourth, because duration and timing of deprivation overlapped, we were unable to address the key issue of sensitive developmental windows in any detail.

In summary, DSE behaviours continue to be core to the deprivation-related pattern in young adulthood in the ERA study – it is strongly related to the duration of deprivation and other deprivation-specific patterns such as ADHD and ASD. However, unlike these other patterns, DSE in and of itself appears to be relatively benign – apparently not, in and of itself, affecting quality of life, functioning within different social domains, or educational and employment status.

**Authorship Statement:**

MR initiated the ERA study. ES-B (PI), BM, JK, RK, WS (Co-PIs) devised the young adult follow-up and MK and NK collected the data. The article was conceived by E-SB who wrote the first draft with further input from JK, BM, RK, WS, DG, JH and MK. MK conducted the statistical analysis in conjunction with ES-B and support from WS. All authors interpreted data, reviewed drafts, and approved the final version of the article.

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**Table 1:** Demographic characteristics and clinical outcomes for the combined UK and Rom<6 group (LoDep) and the Rom>6 month group divided into those with and without parent-rated DSE.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **LoDep**  **(n=119)** | **Rom>6** | | **Group contrasts** | | |
|  | **DSE-**  **(n=77)** | **DSE+**  **(n=21)** | **LoDep *vs* DSE-** | **LoDep *vs* DSE+** | **DSE- *vs* DSE+** |
| **Sex (% f)** | 51 (42.9%) | 43 (55.8%) | 15 (71.4%) | 2(1)=3.16  *p*=.075 | **2(1)=5.85**  ***p*=.016** | 2(1)=1.66 *p*=.198 |
| **Low SES (%)** | 14 (13.0%) | 11 (16.7%) | 4 (21.1%) | 2(1)=0.46  *p*=.511 | 2(1)=0.87  *p*=.351 | 2(1)=0.20 *p*=.659 |
| **Intact families (%)** | 72 (78.3%) | 30 (75.0%) | 13 (61.9%) | 2(1)=0.17  *p*=.659 | 2(1)=2.45  *p*=.117 | 2(1)=1.14 *p*=.287 |
| **Neuro-developmental problems (mean, sd)** | | | | | | |
| **ADHD symptoms** | 50.47 (10.57) | 56.24 (14.39) | 73.55 (12.18) | **t(57.96)=-2.24**  ***p*=.029** | **t(102)=-8.67**  ***p*<.001** | **t(58)=-4.68**  ***p*<.001** |
| **ASD symptoms** | 0.93 (2.12) | 1.73 (2.76) | 3.98 (3.36) | t(120)=-1.77  *p*=.079 | **t(22.77)=-3.87**  ***p*=.001** | **t(57)=-2.74**  ***p*=.008** |
| **IQ** | 102.68 (16.10) | 96.36 (11.03) | 91.00 (14.21) | **t(95.72)=2.43**  ***p*=.017** | **t(90)=2.62**  ***p*=.010** | t(49)=1.45  *p*=.153 |
| **CU traits** | 26.00 (7.00) | 27.13 (7.82) | 33.41 (8.41) | t(114)=-0.79  *p*=.429 | **t(93)=-3.82**  ***p*<.001** | **t(53)=-2.69**  ***p*=.010** |
| **Mental health in early adulthood (mean, sd)** | | | | | | |
| **Depression** | 54.29 (13.96) | 58.22 (12.03) | 63.31 (18.22) | t(106)=-1.44  *p*=.152 | t(19.10)=-1.86  *p*=.078 | t(21.03)=-1.02  *p*=.318 |
| **Anxiety** | 54.15 (13.63) | 58.50 (11.44) | 62.69 (16.67) | t(107)=-1.65  *p*=.102 | **t(87)=-2.18**  ***p*=.032** | t(21.53)=-0.91  *p*=.371 |
| **CD** | 46.38 (10.78) | 47.25 (9.33) | 53.31 (16.54) | t(106)=-0.42  *p*=.679 | t(17.93)=-1.60  *p*=.126 | t(19.38)=-1.37  *p*=.186 |
| **Clinical Service use** | | | | | | |
| **Young Adulthood** | 15 (16.7%) | 12 (30.8%) | 13 (68.4%) | 2(1)=3.27  *p*=.071 | **2(1)=22.01**  ***p*<.001** | **2(1)=7.39**  ***p*=.007** |
| **Young adult functioning (mean, sd)** | | | | | | |
| **QoL** | 16.92 (5.38) | 16.47 (6.21) | 16.87 (3.96) | t(102)=0.37  *p*=.710 | t(85)=0.03  *p*=.973 | t(40.52)=-0.27  *p*=.792 |
| **RAPFA-Social Domain Dysfunction:** | | | | | | |
| **Work** | 23 (28.4%) | 24 (55.8%) | 11 (68.8%) | **2(1)=8.97**  ***p*=.003** | **2(1)=9.56**  ***p*=.002** | 2(1)=0.81  *p=*.369 |
| **Romantic relationships** | 37 (46.3%) | 27 (64.3%) | 12 (80.0%) | 2(1)=3.59  *p*=.058 | **2(1)=5.76**  ***p*=.016** | 2(1)=1.26  *p=*.261 |
| **Friendships** | 20 (24.7%) | 24 (55.8%) | 10 (62.5%) | **2(1)=11.89**  ***p*=.001** | **2(1)=8.94**  ***p*=.003** | 2(1)=0.21  *p=*.644 |
| **Non-specific social contacts** | 11 (13.6%) | 10 (23.3%) | 7 (43.8%) | 2(1)=1.87  *P*=.172 | **2(1)=8.05**  ***p=*.005** | 2(1)=2.39  *p=*.122 |
| **Coping** | 18 (23.1%) | 17 (40.5%) | 8 (53.3%) | **2(1)=4.00**  ***p*=.045** | **2(1)=5.72**  ***p*=.017** | 2(1)=0.74  *p=*.389 |
| **Unemployed (%)** | 11 (12.0%) | 12 (23.5%) | 14 (66.7%) | 2(1)=2.26  *p*=.071 | **2(1)=29.70**  ***p*<.001** | **2(1)=12.00 *p*=.001** |
| **Low education (%)** | 24 (26.4%) | 15 (29.4%) | 14 (66.7%) | 2(1)=0.15  *p*=.700 | **2(1)=12.36**  ***p*<.001** | **2(1)=8.58 *p*=.003** |
|  |  |  |  |  |  |  |
| **Attachment Security (mean, sd)** | | | | | | |
| **IPPA mother** | 98.26 (19.06) | 95.98 (27.29) | 93.11 (23.48) | t(45.36)=0.43 *p*=.672 | t(83)=0.91 *p*=.366 | t(45)=0.35 *p*=.727 |
| **IPPA father** | 96.71 (20.32) | 99.96 (21.79) | 94.62 (18.36) | t(96)=-0.72 *p*=.473 | t(77)=0.33 *p*=.741 | t(41)=0.75 *p*=.457 |
| **PAQ affective quality** | 108.38 (19.72) | 103.85 (26.67) | 101.15 (26.72) | t(50.89)=0.88 *p*=.382 | t(84)=1.21 *p*=.230 | t(47)=0.33 *p*=.746 |
| **PAQ facilitators of independence** | 51.52 (11.08) | 51.84 (14.19) | 48.22 (12.53) | t(103)=-0.13 *p*=.899 | t(84)=1.03 *p*=.308 | t(47)=0.85 *p*=.398 |
| **PAQ source of support** | 45.32 (9.49) | 44.07 (11.31) | 43.67 (9.51) | t(103)=0.59 *p*=.557 | t(84)=0.61 *p*=.543 | t(47)=0.12 *p*=.904 |

Note: Where degrees of freedom have decimal places, corrected values have been used to account for unequal variances. *LoDep* - combined UK adoptees with Romanian Adoptees with less than 6 months of deprivation. SES - Socio-Economic Status based on family occupational status at age 15; DSE- = *Rom>6* individuals not meeting DSE criteria; DSE+ = *Rom>6*  individuals meeting DSE criteria: ADHD= self-rated CBRS T score; ASD= parent rated Social Communication Questionnaire mean and (sd); CD= conduct disorder (Self rated CBRS T score); CU = Parent rated Callous Unemotional Traits; Depression = Self rated CBRS T score; Anxiety = Self-rated CBRS T scores mean and sd; QoL = Self rated Satisfaction with Life score; Low education = GCSE’s or less; IPPA – Inventory of Parent and Peer Attachment; PAQ – Parental Attachment Questionnaire.