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Commentary: The role of callous and unemotional traits in developmental psychopathology – Reflections on Frick, Ray, Thornton & Kahn (2013)

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Heterogeneity in the presentation, antecedents, prognosis and treatment response of antisocial behaviour has long provided a challenge to developmental psychopathology researchers. As illustrated in the incisive Annual Research Review (ARR; Frick, Ray, Thornton, & Kahn, 2013), there is growing evidence that the presence of high callous-unemotional (CU) traits identifies a subgroup of antisocial young people with a particularly aggressive and pervasive form of disorder. Frick and colleagues extend their developmental psychopathology approach to CU traits by linking in theories of conscience development and considering evidence on the stability of CU traits. This commentary addresses these themes and the area more generally, considering (1) comparison of a CU specifier to alternative approaches to antisocial heterogeneity (2) high CU traits in the absence of antisocial behaviour and (3) aspects of the measurement of CU traits.

### *Carving antisocial behaviour at the joints*

It is clear that antisocial behaviour is a heterogeneous concept. Even if one limits oneself to the DSM-5 definition of Conduct Disorder (CD), only 3 of 15 symptoms (ranging from fighting and bullying to lying, staying out late and playing truant) are required to reach diagnostic threshold. Therefore, five children each receiving a CD diagnosis may not share a single symptom. Previous versions of the DSM have taken varying approaches to identifying subtypes of CD. DSM-III distinguished socialised and under-socialised CD, the latter subtype sharing some characteristics of high CU traits (Frick, Ray, Thornton, & Kahn, 2014a), as well as distinguishing aggressive and non-aggressive CD. DSM-IV dropped all these specifiers and instead subtyped CD based on age-of-onset (childhood onset prior to age 10, adolescent onset after this). DSM-5

retained the age of onset specifier and added an additional high CU traits specifier based under the name of “CD with limited prosocial emotions”.

While the DSM may have applied very different theoretical approaches to subtyping CD, the practical categorisations of CD cases are likely to overlap to some extent. The DSM-IV age-of-onset classification was intended to overlap with the socialised/under-socialised subtype of CD used in DSM-III as it was believed that under-socialised cases tended to have an early-onset (Lahey, 2014). Children with early-onset antisocial behaviour are more likely to have high CU traits than children with adolescent-onset (Frick & Viding, 2009). Physical aggression is also more common in children with high CU traits and early onset antisocial behaviour (Frick et al., 2014a). Therefore, to some extent, the same CD cases may be classified as early-onset, high CU traits, undersocialised and aggressive on the various classification frameworks.

As summarised in the ARR (and set out in more detail elsewhere, Frick et al., 2014a) a growing body of evidence indicates that children with serious conduct problems and high CU traits may be qualitatively different from antisocial children with low CU traits. While the evidence base for including CU traits in diagnostic frameworks is compelling, key findings require replication and there remain many questions to be answered (Frick, Ray, Thornton, & Kahn, 2014b; Lahey, 2014), some of which are considered below. However, the DSM is an evolving framework, and the inclusion of CU in the current diagnostic criteria will guide future research to address these questions, providing a strong basis for decision-making about future diagnostic criteria. The situation was similar when the age-of-onset specifier of CD was added to DSM-IV; most

of the evidence relevant to the validity of this approach has been generated since DSM-IV was published (Fairchild, van Goozen, Calder, & Goodyer, 2013).

Inclusion of both the CU and age of onset specifiers in DSM-5 should encourage research to address the relationship between the two. The position of the ARR is that there may be three subtypes of CD: (a) an early-onset subtype with low levels of CU traits and problems in regulating emotions and behaviour, (b) an early onset group with high CU traits and (c) a late onset group with problems in identity development. This position is consistent with a range of existing evidence but will benefit from further testing.

*Should CU behaviours be treated as symptoms of conduct disorder?*

Many antisocial behaviour subtyping approaches are based on characteristics of the behaviour themselves, (e.g., their age at onset, whether or not they involve physical aggression). In contrast, the CU specifier focusses on the affective and interpersonal context of the behaviour, rather than on the nature of the behaviour itself (Frick et al., 2014a). This is a desirable property of a specifier that is designed to index qualitatively different forms of antisocial behaviour rather than to identify more or less severe forms. Ideally, a specifier would not be correlated with the severity of the behaviour that it is subtyping. However, there is a correlation between CU traits and severity of antisocial behaviour. As the ARR points out, studies that are most informative on qualitative differences between antisocial children with and without high CU traits control for the absolute level of antisocial behaviour.

The correlation between CU traits and antisocial behaviour severity is compatible with an alternative conception of CD in which CU behaviours are defined as symptoms. For

example, a revised CD definition could include two additional symptoms to measure CU behaviours such as “Often lacks appropriate remorse or guilt after causing offence or harm” and “Often shows a callous-lack of empathy for the feelings of others”. CD would then include 17 criterion symptoms with any 3 required to meet diagnostic threshold. A key test of the utility of this revision would be to examine the characteristics of the children who would receive a diagnosis of CD on the revised criteria but not on the DSM-5 criteria. These children would have one or two DSM-5 CD symptoms (therefore falling below the DSM-5 diagnostic threshold) in addition to one or two of the new CU symptoms, a combination which could cross the diagnostic threshold in the revised scheme. These children might show no functional impairment and have a normal psychiatric and psychosocial prognosis. This would indicate that DSM-5 is right not assign them a diagnosis. Based on what we know about children with the CU traits in the absence of CD (discussed below), however, we might expect these children may show functional impairment and have an increased risk of morbidity in the future. If so, this would be evidence that treating CU behaviours as CD symptoms is helpful in diagnostic decision making.

There would be disadvantages to this approach, however. Not least, there is the large body of evidence showing that high CU traits do function as a useful qualitative specifier of serious conduct problems, as demonstrated in the ARR. Therefore, one would want to continue using CU to subtype children with serious conduct problems. However, exploration of the effect of treating CU behaviours as symptoms of CD may still be worthwhile. It is possible that DSM-5 is not diagnosing a group of children with CD who would substantially benefit from treatment. If so, there may be alternative ways of

defining the disorder that allow these children to receive a diagnosis while maintaining the advantages of the specifier.

### *CU traits beyond CD*

The implications of research on CU traits extend beyond the diagnosis of CD. For example, high CU traits might work as a specifier for Oppositional Defiant Disorder (ODD). The presence of high CU traits might help to distinguish which children with ODD are likely to progress to CD, a question that has preoccupied a number of researchers, including myself, in the past. Beyond clinical diagnostic frameworks, the concept of CU traits has been, and will continue to be useful. As noted by Lahey (2014), CU traits appear to match the neuroscience based definition of mental disorders advocated in the Research Domain Criteria framework (Insel et al., 2010). The ARR shows that there is growing evidence for abnormal brain function involving specific neural circuits underlying CU traits.

One of the strong features of the developmental psychopathological approach taken in the ARR is that it links research on CU traits in the context of serious conduct problems with research on conscience development in the general population. This provides an encouraging framework on which to link aspects of temperament such as fearlessness and behavioural inhibition to characteristics of parenting such as unresponsiveness and inconsistency to the presence of CU traits via disruption to the normal development of conscience. This work provides hope that interventions could be applied early in development to encourage the development of conscience in at-risk children and prevent the development of CU traits.

Considering CU traits in this way raises questions about whether children exist who have high CU traits but do not have serious conduct problems. The evidence is that they do, as briefly covered in the ARR. In the UK general population sample that I was involved in studying (Rowe et al., 2010), there was a larger group of children who had high CU traits but no diagnosis of CD (2.9%) than had high CU traits and CD (0.9%). The CU only children showed substantial sub-diagnostic levels of conduct problems. After controlling for level of conduct problems, the CU group showed impaired psychosocial functioning, higher levels of peer problems, and were at risk for other psychiatric disorders. In combination with evidence from other studies, this might indicate that high CU traits might be recognised as a disorder in its own right (Rutter, 2012), rather than only as a subtype or component of CD. Further research will be required to address this issue.

#### *Stability and measurement of CU traits*

The Annual Review provides a helpful summary of research addressing the stability of CU traits. The review highlights that CU traits are relatively stable even across long periods, and appears consistent with the stability shown by other psychopathological constructs and personality traits. There is some evidence that parent-report is more stable than self- and teacher-report. Further work on this issue may inform revisions of the items used to form the limited prosocial emotions specifier of CD used in the DSM. Revised approaches are likely to continue to require a dichotomous decision about whether a high CU threshold has been crossed. Unfortunately this brings with it the risk that a dichotomous measure will have lower stability than a continuous one (Frick et al., 2014b).

The evidence cited in the ARR that levels of CU traits decrease with age in many cases is also encouraging, particularly as identifying the factors that are associated with the decrease may provide inspiration for intervention design. One study that used general growth mixture modelling to identify different trajectories of CU development (Fontaine, McCrory, Boivin, Moffitt, & Viding, 2011) found that 13.4% of children fitted a decreasing trajectory across ages 7 to 12, whereas 4.7% were on a stable high trajectory. There was also an increasing trajectory group making up 7.3% of the sample. Further research of this sort will be helpful in understanding change in CU over time. Application of the distinction between primary and secondary psychopathy, with the former hypothesised to represent an innate pre-disposition (which might manifest early in development) and the latter to reflect an adaptation to an inappropriate rearing environment (that might manifest later), may help to provide hypotheses on how risk factors might differ between trajectories in future research.

Lahey (2014) provides an excellent discussion of some important measurement issues including the factor structure of CU measures. Lahey concludes that items measuring unemotional traits may not be sufficiently correlated with callousness to warrant defining them as a single factor. More research is required to examine this issue. As Lahey points out, if callousness and unemotionality reflect different psychobiological processes then this may provide an opportunity to further understand the heterogeneity in antisocial behaviour.

### *Implications for further research*

The ARR eloquently summarises a large body of research that has been conducted addressing CU traits. This evidence base will continue to grow at pace, with attention on

CU traits likely to increase further following the publication of DSM-5. A number of helpful directions for further research are articulated in the ARR as well as elsewhere (Frick et al., 2014a, 2014b; Lahey, 2014). In the above discussion a number of research questions have been highlighted, including the (1) the effect of re-configuring the diagnosis of CD to include CU behaviours as symptoms of the disorder rather than as a specifier, (2) the effect of specifying ODD in terms of high and low CU traits, (3) further work to identify the characteristics of children high on CU traits in the absence of severe conduct problems, (4) the further application of latent class growth curve modelling to understand patterns of stability and change in CU traits and (5) studies assessing whether CU traits should be conceived as a single factor.

Addressing these and similar questions will aid our understanding of how antisocial behaviour should be categorised into meaningful sub-types and how the aetiology and prognosis for each subtype differs. This in turn will aid the development of tailored treatments for different types of antisocial behaviour. The potential to advance our theoretical understanding of heterogeneity in antisocial behaviour and to make important impacts in clinical practice indicate that research addressing CU traits has a very promising future.

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