

# Developmental Continuity of Oppositional Defiant Disorder Subdimensions at Ages 8, 10, and 13 Years and Their Distinct Psychiatric Outcomes at Age 16 Years

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**Objective:** To test the developmental continuity, interrelationships, and predictive associations of the oppositional defiant disorder (ODD) subdimensions of *irritable*, *headstrong*, and *hurtful*. **Method:** Data were collected from 6,328 mother–child pairs participating in the Avon Longitudinal Study of Parents and Children (United Kingdom). **Results:** Developmental continuity for each subdimension was strong and interrelationships indicated that *headstrong* was associated mainly with *irritable*, whereas *irritable* did not cross associate with other ODD subdimensions; and *hurtful* was associated with lower levels of *headstrong*. With regard to associations at age 16 years, *irritable* at age 13 years was associated with depression, whereas *headstrong* at 13 was associated with delinquency and callous attitude; at age 13, *hurtful* failed to associate with any of the 3 age 16 outcomes. **Conclusions:** The results suggest that the ODD *headstrong* and *irritable* subdimensions are developmentally distinct, with small cross-over (i.e., *headstrong* to *irritable*), and are associated with unique outcomes. *Hurtful* does not appear to be associated with future maladjustment in children. *J. Am. Acad. Child Adolesc. Psychiatry*, 2013;52(9):961–969. **Key Words:** Avon Longitudinal Study of Parents and Children (ALSPAC), callous traits, conduct problems, depression, oppositional defiant disorder

Oppositional defiance in youth is a highly prevalent psychiatric condition that strongly associates with a wide range of psychiatric illness, including both emotional (e.g., depression) and externalizing disorders (e.g., conduct disorder, and callous-unemotional traits).<sup>1–3</sup> Because oppositional defiant disorder (ODD) predicts to such a wide range of adjustment difficulties in children, it has been proposed that ODD may be composed of distinct subdimensions that may have different psychiatric outcomes.<sup>4–6</sup>

Along these lines, Stringaris and Goodman<sup>6</sup> proposed and defined 3 a priori subdimensions of ODD: *irritable* (i.e., temper outbursts, easily annoyed, angry/resentful), *headstrong* (i.e., argued with grown-ups, rule violations, purposefully annoyed others, blamed others), and *hurtful*

(i.e., been spiteful, tried to get his/her own back on people [a colloquial British expression for vindictive behavior]). Stringaris and Goodman<sup>6</sup> found that the *irritable* (or affective) subdimension prospectively associated with emotional problems, peer problems, and, to a lesser extent, conduct problems and a callous disposition toward others, whereas the *headstrong* (or opposition) subdimension related more strongly to conduct problems and hyperactivity; *hurtful* (or spitefulness) related more strongly to callousness. It has been proposed that identifying such distinct dimensions may improve clinical prediction of later outcomes and may help to tailor treatments for children with ODD.<sup>6</sup>

Following the Stringaris and Goodman<sup>6</sup> study, several studies have found support for models that distinguish dimensions within ODD. Some have identified 2 such dimensions (*irritable* and *headstrong*; Rowe *et al.*<sup>5</sup>), whereas others have identified 3 dimensions with either identical or a slightly different symptom structure to that



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originally described by Stringaris and Goodman,<sup>6</sup> such as Burke *et al.*<sup>4,7,8</sup> Most recently, a study compared the proposed models and found strongest support for the 3-factor structure originally proposed by Stringaris and Goodman<sup>6</sup> and adopted by the *DSM-5*.<sup>9</sup>

Based on the studies outlined above, it seems like there is good evidence for at least 2 ODD subdimensions (*irritable* and *headstrong*); however the developmental distinctiveness of these subdimensions has not been established. For example, the Stringaris and Goodman<sup>6</sup> study collapsed across ages 5 to 16 years, and therefore did not identify the subdimensions at the respective ages. Similarly, Burke *et al.*<sup>7</sup> examined the subdimensions by collapsing data across ages 5 and 8, whereas Rowe *et al.*<sup>5</sup> analyzed an accelerated cohort sequential study, and thereby collapsed data at the first wave for participants 9, 11, and 13 years of age. In addition, although Stringaris *et al.*<sup>10</sup> did confirm ODD subdimensions, the analyses were conducted on waves of data that collapsed different ages. Finally, Ezpeleta *et al.*,<sup>11</sup> and Krieger *et al.*<sup>9</sup> performed cross-sectional studies rather than longitudinal studies, with a mean age of 3 years for the former and an age range of 6 to 12 years for the latter.

The current study sought to confirm evidence for the subdimensions of ODD as proposed by Stringaris and Goodman<sup>6</sup> from late childhood through to early adolescence. More specifically, we investigated, in parallel with the studies outlined earlier, the following: first, the reliability of the factor structure of the ODD subdimensions of *irritable*, *headstrong*, and *hurtful* at ages 8, 10, and 13 years; if these dimensions are to be used in future psychiatric classification it is important to know that they can be reliably measured; second, the degree to which developmental interrelationships of ODD subdimensions demonstrate continuity across this age range; it is important for clinicians and researchers to know whether children who are, say, *irritable*, will continue to be so over time or whether the boundaries between the dimensions are fluid over time; and third, the degree to which the ODD subdimensions at age 13 related to the age 16 outcomes of depression, conduct problems and callous attitude, controlling for ODD subdimensions at ages 8 and 10; this information is crucial for prediction and for further research into possible interventions.

## METHOD

### Sample

The Avon Longitudinal Study of Children and Parents (ALSPAC) was established to understand how genetic and environmental characteristics influence health and development in parents and children. All pregnant women resident in a defined area in the southwestern part of England, with an expected date of delivery between April 1, 1991, and December 31, 1992, were eligible and 13,761 women (contributing 13,867 pregnancies) were recruited. These women have been followed up over the last 19 to 22 years.<sup>12</sup> When compared with 1991 National Census Data, the ALSPAC sample was found to be similar to the UK population as a whole.<sup>13</sup> Ethical approval for the study was obtained from the ALSPAC Law and Ethics Committee and the local research ethics committees. (More detailed information on ALSPAC is available at <http://www.bris.ac.uk/alspac/>.)

### Measures

*Irritable, Headstrong, and Hurtful Subdimensions at Ages 8, 10, and 13 Years.* Indicators of the 3 potential ODD subdimensions were derived from the Development and Well Being Assessment (DAWBA), a well-validated measure developed for the British Child Mental Health surveys,<sup>14</sup> which was rated by teachers and parents. In addition to generating binary (yes/no) diagnostic indicators, DAWBA algorithms have recently been developed to generate 6-level ordered-categorical measures of the probability of disorder for each of the individual items underlying the diagnoses, ranging from <0.1% to >70%.<sup>15</sup> Evaluated in 2 large-scale national samples, these DAWBA "bands" functioned well as ordered-categorical measures, showed dose-response associations with mental health service contacts, and showed associations with potential risk factors very similar to those of clinician-rated diagnoses.<sup>16</sup>

The DAWBA asks 9 separate symptoms of ODD. Each parent- and teacher-rated question is introduced with the stem: "Over the last 6 months, and as compared with other children the same age, has s/he often . . ." followed by the specific clause. Children were assigned a diagnosis only if their symptoms were causing significant distress or social impairment. Following the lead of Stringaris and Goodman,<sup>6</sup> *irritable* was defined by the following 3 symptoms: has temper outbursts; has been touchy or easily annoyed; and has been angry or resentful (age 8,  $\alpha = 0.81$ ; age 10,  $\alpha = 0.83$ ; age 13,  $\alpha = 0.85$ ). *Headstrong* was defined by the following 4 symptoms: argued with grown-ups; takes no notice of rules/refused to do as s/he is told; 3) seemed to do things to annoy other people on purpose; and blamed others for his/her own mistakes or bad behavior (age 8,  $\alpha = 0.86$ ; age 10,  $\alpha = 0.87$ ; age 13,  $\alpha = 0.87$ ). ODD *hurtful* was defined by these symptoms: been spiteful; tried to get his/her own back on

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