



Transactions among adolescent trait and state emotion and diurnal and momentary cortisol activity in naturalistic settings

Emma K. Adam*

Program on Human Development and Social Policy, School of Education and Social Policy, and the Cells to Society Center, Institute for Policy Research, Northwestern University, 2120 Campus Drive, Evanston, IL 60208, USA

Received 8 September 2005; received in revised form 28 January 2006; accepted 31 January 2006

KEYWORDS

Emotion;
HPA axis;
Cortisol;
Multilevel modeling;
Adolescence;
Naturalistic

Summary In a community sample of 52 adolescents, multilevel growth curve modeling was utilized to examine whether within-person changes in momentary mood states, and individual differences in trait emotional functioning, were related to adolescent cortisol levels in naturalistic settings. Salivary cortisol levels were measured seven times a day on two typical weekdays in conjunction with diary reports of adolescent mood states. Questionnaire reports of trait emotional functioning (depression, anxiety, and anger) were obtained, as were reports of demographic, developmental, and health control variables. After accounting for the effects of time of day and a wide range of control variables, within-person increases in state negative mood (worry/stress and anger/frustration) were significantly associated with within-person increases in cortisol. When examining trait emotional functioning, adolescents with higher levels of depressive symptoms had slightly lower basal cortisol levels, and adolescents with higher levels of trait anger had a significantly stronger cortisol response to awakening. Several developmental effects were found—adolescents at higher stages of pubertal development had daytime basal cortisol curves that were more elevated, had a steeper diurnal decline, and showed a lesser cortisol awakening response, and cortisol responses to worry/stress increased with age. Cortisol levels were also higher at moments adolescents were alone rather than with others, an effect that declined significantly with age. Cortisol levels were also higher at moments adolescents were alone rather than with others, an effect that declined significantly with age. Results suggest that ongoing transactions occur between adolescents' everyday emotional experiences and their cortisol levels, and that adolescent cortisol activity is modified by age/pubertal stage and by trait emotional functioning.

© 2006 Elsevier Ltd. All rights reserved.

* Tel.: +1 847 467 2010; fax: +1 847 491 8999.

E-mail address: ek-adam@northwestern.edu

1. Introduction

In this study, sophisticated data collection and analytic techniques are employed to examine associations between state and trait emotion and cortisol levels in normal adolescents going about their everyday lives, controlling for the effects of time of day and a wide variety of health and lifestyle factors. Given the relative lack of research on the normal functioning of the hypothalamic-pituitary-adrenal (HPA) axis in adolescents, identifying the extent to which adolescent cortisol levels vary with their mood states and with trait differences in emotional functioning is of considerable normative interest; such findings are also of great relevance to researchers interested in identifying risk factors for the development of emotional pathology.

Consistent associations have been found between the functioning of the HPA axis and the presence of major depression (MDD) in adult populations (Chrousos and Gold, 1992; Yehuda et al., 1996). Alterations in emotional functioning are a primary feature of MDD, and both state and trait affect are associated with HPA axis activity even in healthy adults (Polk et al., 2005). As a result, there has been considerable interest in identifying individual differences in HPA axis activity as a potential risk factor for the development of emotional disorders (Granger et al., 1996; Goodyer et al., 2003). Rates of onset of depression and other emotional disorders increase dramatically in adolescence (Burke et al., 1990, 1991), and many adult episodes of MDD have their initial symptom onset during this time period (Costello et al., 2002). As a result, adolescence is a critical time period to study biopsychosocial processes related to risk for emotional disorder.

Researchers studying associations between HPA axis activity and emotional pathology in adolescence have theorized that adolescents with elevated basal cortisol levels and/or a tendency toward greater HPA reactivity to social and emotional challenges may be at greater risk for the development of internalizing problems (including depression and anxiety disorders) (Granger et al., 1996; Goodyer et al., 1998). Associations between basal cortisol levels and depression have, however, been far less consistent in adolescents than in adults, with some studies finding no association, others finding associations only in particular subgroups or at particular times of day, and still others finding associations between higher basal cortisol levels and depression only when additional factors (such as levels of DHEA) are taken into account (Birmaher and Heydl,

2001; Goodyer et al., 2001; Kaufman et al., 2001; Dahl, 2002; Angold, 2003). In the few adolescent studies examining reactivity, several offer evidence in favor of greater cortisol reactivity as a risk factor for the development of internalizing problems (Granger et al., 1996; Goodyer et al., 2000); others provide more mixed evidence, with associations between internalizing symptoms and reactivity depending on gender and the nature of the stressor (Klimes-Dougan et al., 2001).

Most prior studies of adolescent emotional functioning and cortisol have focused on high-risk samples (Goodyer et al., 2000), clinic-referred samples (Granger et al., 1994, 1996), or community samples selected to fit particular diagnostic profiles (Klimes-Dougan et al., 2001), and have utilized laboratory-based stress paradigms. According to the tenets of developmental psychopathology, however, it is important to understand the normal functioning of emotional, social and biological systems in order to identify their role in the development of psychopathology (Cicchetti and Rogosch, 2002). That is it is hard to identify what represents 'abnormal' or 'risky' patterns of cortisol activity when little is known about the typical or expected functioning of the HPA axis in adolescents. Virtually no research exists on the normal responding of the HPA axis to social and emotional challenges experienced by adolescents in their everyday lives (for exceptions, see Flinn and England, 1995; Schneiders et al., 2005). This lack of research on cortisol activity in normal adolescents in their everyday environments is surprising, given that the rapidly changing physical, social, and emotional worlds of adolescents present them (and researchers) with a rich array of social and emotional stressors.

Several prior studies have used an experience sampling approach to measure cortisol reactivity to everyday events and emotions in adult populations (Nicolson, 1992; van Eck et al., 1996a; Smyth et al., 1997a,b). These studies, in which adults were randomly beeped during their daily lives to provide diary reports of mood followed by salivary cortisol samples, found experiences of stress, distress, and negative emotion to be associated with higher momentary cortisol levels. No published studies, however, have yet taken this approach to studying associations between adolescent emotion and cortisol. There are several advantages to this naturalistic approach: it allows examination of reactivity to events and emotions that actually occur in participants' lives, and thus may have increased salience; it allows simultaneous measurement of basal cortisol rhythms; it allows investigation of individual

Download English Version:

<https://daneshyari.com/en/article/336691>

Download Persian Version:

<https://daneshyari.com/article/336691>

[Daneshyari.com](https://daneshyari.com)