

## Frequency of bullying at work, physiological response, and mental health<sup>☆</sup>

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### Abstract

**Objective:** The present study aimed to elucidate the relationship between bullying at work and cortisol secretion. Of particular interest was to examine whether frequently and occasionally bullied persons differed from nonbullied persons. **Methods:** The study included 1944 employees (1413 women and 531 men) from 55 workplaces in Denmark (16 private and 39 public workplaces). During a work day three saliva samples were collected at awakening, +30 min later, and at 20:00 hours, and analyzed for cortisol concentrations. Mental health was assessed using items on somatic, cognitive, stress, and depressive mood. **Results:** Of the 1944 employees, 1.1% was frequently bullied and 7.2% occasionally bullied. Frequently bullied persons reported poorer mental health and had a 24.8% lower salivary cortisol concentration compared with the nonbullied reference group. Occasionally bullied persons had a poorer self-reported mental health, but their

cortisol concentrations did not deviate from the group of nonbullied persons. The associations remained significant even after controlling for age, gender, exact time of sampling, mental health, and duration of bullying. Bullying occurred at 78% of the workplaces (43 workplaces); frequent bullying occurred at 21% of the workplaces (40%). **Conclusion:** Frequent bullying was associated with lower salivary cortisol concentrations. No such association was observed for occasional bullying. Whether the generally lower secretion of cortisol among the frequently bullied persons indicate an altered physiological status remains to be evaluated in future studies. Yet, the physiological response seems to underscore the possibility that bullying indeed may have measurable physiological consequences. Hence, the physiological response supports the mental symptoms found among the frequently bullied. © 2011 Elsevier Inc. All rights reserved.

**Keywords:** Bullying; Mental health; Stress symptoms; Depressive symptoms; Cortisol level

### Introduction

Stressful and poorly organized work environments as well as deficiencies in leadership may facilitate work-related bullying either directly or by creating a work climate in

which bullying can flourish [1–5]. Indeed, the phenomenon addressed as workplace “mobbing,” “bullying,” or “emotional abuse,” etc., has been the object of many studies. In Denmark, it has been estimated that 8.3% of the working population between 20 and 59 years of age has been subjected to bullying within the past year [6]. Of these, 1.6% reported frequent bullying, that is, weekly or daily. Similar results were observed in a previous study among 2539 Norwegian employees where 2% reported severe workplace bullying [7].

The most studied health outcomes of bullying are psychological symptoms and emotional reactions such as depression, burnout, anxiety, and aggression [8–12]. But also psychosomatic and musculoskeletal health complaints have

*Abbreviation:* CAR, cortisol awakening response; Decline, decline in cortisol from the second morning sample to the evening sample.

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often been in focus [13–17]. According to transactional stress models, the nature and severity of emotional reactions following exposure to bullying may be a function of a dynamic interplay between event characteristics and individual appraisal- and coping processes [18–20]. Definitions of bullying at work commonly entail descriptions that emphasize *prolonged exposure to interpersonal acts of a negative nature*, with which the target is *unable to cope*. These negative acts may be both person related and work related. Together, these factors are likely to make up a highly stressful situation characterized by lack of control. Attributions of control and predictability are salient features of the individual's appraisal processes [19,21]. While the link between cognitive processes and physiology is emphasized in transactional models such as the cognitive activation theory of stress and the allostasis model, it is clear that the physiological consequences of bullying have been insufficiently examined and understood [22,23].

Theoretically, stress reactions may affect health either by a direct biological, prolonged physiological activation and lack of restitution, or by affecting health through lifestyle and health behaviors [24]. However, to this date, only two studies have addressed the physiological responses to workplace bullying with biological measurements among occupationally active targets [25,26]. Kudielka and Kern [26] found no significant differences in terms of both morning cortisol increase and cortisol day profile between the work day and the day off among 12 women and four men (aged 45 years, range 33–60 years). Nonetheless, the difference between the peak cortisol level in the morning and the lowest level in the evening showed a trend toward a lesser decrease at the work day ( $P=.10$ ) among people bullied at work [26]. Similarly, Hansen et al. [25] observed signs of an altered hypothalamic-pituitary-adrenal axis activity manifested as a lower excreted amount of salivary cortisol in the morning. The stress response, which occurs when homeostasis is threatened or perceived to be threatened, is mediated by the stress system. Cortisol is a natural energy-releasing hormone with a distinct diurnal rhythm being highest in the morning and decreasing to the lowest in the evening. The regulation of cortisol can be disturbed in various ways such as high cortisol over a longer period, a flat diurnal cortisol curve (i.e., low morning cortisol or high evening cortisol), or insufficiently secreted cortisol [27]. Hence the lower cortisol in the morning among bullied employees [25] may indicate a lower energy level in the morning.

While previous studies were interesting and potentially may explain how bullying get “under the skin,” it is equally clear that the design of the studies and the methods used have limitations. Accordingly, the results needed to be replicated in other populations and with stronger study designs in order to test their validity. A limitation of our previous study was that the definition of bullying did not include the frequency or duration of bullying. Severity and duration of bullying are considered important, although controversies exist about how to incorporate them in the definition of bullying [4].

Leymann [4] suggested exposure to at least one negative act at least weekly for 6 months. Other researchers [28,29] have argued that there may be incidents so severe and long lasting that they do not necessarily have to be repeated frequently during longer periods of time [30]. Yet, many researchers agree that “at least weekly over a longer period of time” should be included in the definition of bullying. When using this restriction the occurrence of bullying is often estimated to be between 1% and 2% [31]. However, bullying is not an either-or phenomenon but rather a gradually evolving and escalating process [32]. And it has been found that even being bullied occasionally may have an impact on the health and well-being [33].

Thus, we wanted to investigate whether there is a difference in cortisol profiles and health symptoms between frequently (daily or weekly) and occasionally (monthly or now and then) bullied occupationally active persons. The hypothesis being that being bullied for a long time as well as being bullied frequently is related to lower levels of salivary cortisol and health problems.

## Methods

### Participants

Participation was voluntary and all participants gave their written consent to the study. The study protocol was approved by the local ethics committee (KF 01 302955). All participants were respondents to a psychosocial work environment and health survey conducted at 60 workplaces in Denmark in 2006. In total, 2255 women and 1099 men ( $N=3363$ ) completed the survey (i.e., 46% response rate).

Three questions were used to classify bullied respondents, witnesses to bullying, and perpetrators. To calibrate the respondents, a definition of bullying was listed ahead of the questions: “Bullying takes place when employees are exposed to negative or offensive acts repeatedly over a longer period of time, which it is difficult to defend oneself against.” The three questions read: “Have you been subjected to bullying at work within the past 6 months?” “Have you witnessed bullying at work within the past 6 months?” “Have you yourself bullied someone or participated in bullying someone at work within the past 6 months?” These items were responded to on a five-step scale: 1=never, 2=now and then, 3=monthly, 4=weekly, 5=daily. Respondents were excluded from the target groups if answering two or more on having bullied someone. One item measured duration of bullying, “For how long time have you been bullied?” and was responded to on a five-point scale: <1 month, 1–6 months, 7–12 months, 1–2 years, and >3 years.

Of the whole sample, 75.5% [1807 women and 734 men ( $n=2541$ )] gave saliva samples (i.e., 34.5% response rate) for determination of cortisol concentrations. Only respondents who gave saliva samples and had answered the questions about bullying were included ( $n=1944$ ). Persons who reported being witnesses ( $n=406$ ) or perpetrators ( $n=143$ )

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