



# The impact of menstrual cycle-related physical symptoms on daily activities and psychological wellness among adolescent girls



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## ABSTRACT

Associations between perimenstrual physical and psychological symptoms have not been adequately studied among adolescent girls. The purpose of the present study was to test a mediation hypothesis postulating that perimenstrual disengagement from daily activities would mediate the association between physical symptoms and psychological symptoms. A non-clinical sample of  $N = 208$  Italian adolescent girls (age  $M = 16.68$  years) completed a 95-item online retrospective questionnaire regarding perimenstrual symptoms, and how these symptoms affect their daily activities. Structural Equation Modeling was used to test the mediation hypothesis. Results showed that physical and psychological symptoms were strongly associated. More importantly, results supported the hypothesis that perimenstrual disengagement from daily activities mediates the association between physical symptoms and psychological symptoms, but only for depressed mood and cognitive symptoms. This study provides support for a novel theoretical framework linking diverse aspects of menstrual cycle change. Longitudinal research is needed to replicate these findings.

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Recurring symptoms of the menstrual cycle have been shown to be a significant source of recurring stress among adolescent girls (Cleckner-Smith, Doughty, & Grossman, 1998; Derman, Kanbur, Tokur, & Kutlut, 2004; Fisher, Trieller, & Napolitano, 1989; Vichnin, Freeman, Lin, Hillman, & Bui, 2006). For example, Fisher et al. (1989) and Cleckner-Smith et al. (1998) found that 43% and 56% (respectively) of adolescent girls had at least one extreme symptom; Vichnin et al. (2006) found that 31% met criteria for premenstrual syndrome (PMS); and Derman et al. (2004) found that 13.4% showed symptoms consistent with severe PMS. Moreover, menstrual cycle-related symptoms have also been reported across diverse national and ethnic samples. For example, with a cross-national sample from the U.S., Canada, and Slovakia, 8.3% of the adolescent girls had symptoms consistent with a diagnosis of Premenstrual Dysphoric Disorder (PMDD), and 21.3% had symptoms consistent with severe PMS (Steiner et al., 2011); and with a sample of primarily African American girls, 84.3% self-reported PMS, although stringent diagnostic criteria were not applied (Houston, Abraham, Huang, & D'Angelo, 2006). Finally, research also suggests that these symptoms are unlikely to resolve after adolescence (Borenstein, Chiou, Dean, Wong, &

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Wade, 2005; Borenstein et al., 2003). Surprisingly, most research on affective changes among adolescent girls does not consider the important question of whether and how menstrual cycle-related symptoms may interfere with the developmental course of girls who experience these symptoms.

Although much attention has focused on the psychological symptoms of the menstrual cycle, research has demonstrated that physical symptoms are also common and severe, a finding that has been validated across multiple cultures, including Japan (Takeda, Tasaka, Sakata, & Murata, 2006), Italy (Kiesner, 2009; Kiesner & Pastore, 2010; Monagle et al., 1993), and the U.S. (Laessle, Tuschl, Schweiger, & Pirke, 1990; Sternfeld, Swindle, Chawla, Long, & Kennedy, 2002; Woods, Most, & Dery, 1982). For example, Woods et al. (1982) found that 30% of U.S. women reported mild or moderate menstrual cycle-related physical symptoms like headache, skin disorders, cramps, backache, fatigue, painful breasts, and swelling, with 17% reporting menstrual cramps as severe or disabling; and Takeda et al. (2006) found that only 18.8% of Japanese women never experienced physical symptoms, whereas 34.2% rated their physical symptoms as moderate to severe. Moreover, past research has shown robust associations between physical and psychological symptoms of the menstrual cycle among adults (Kiesner, 2009; Kiesner & Pastore, 2010), and adolescents (Beal et al., 2014; Dorn et al., 2009; Negriff, Dorn, Hillman, & Huang, 2009; Raja, Feehan, Stanton, & McGee, 1992), although the cause of this association is not understood. Therefore, the aim of the present study is to better understand the associations between these symptom types within a theoretical framework that is especially relevant to this developmental age period.

### Perimenstrual symptoms, changes in daily activities, and adolescent adjustment

Physical distress has been shown to interfere with important aspects of youth's social-development. For instance, research has shown that chronic or recurrent pain in children, caused by various clinical problems (e.g., migraine headaches, abdominal pain, musculoskeletal pain, and pediatric chronic diseases), influences important aspects of family life, social life, and school functioning (for a review, see Palermo, 2000). Similarly, there is evidence that menstrual cycle-related symptoms (primarily physical) lead to difficulties in and disengagement from school, social relations, and physical activities. For example, research has shown that painful menstruation (i.e., dysmenorrhea) and other menstrual cycle-related physical symptoms are often associated with school absenteeism and impaired school performance (Banikarim, Chacko, & Kelder, 2000; Hillen, Grbavac, Johnston, Straton, & Keogh, 1999; Houston et al., 2006; Klein & Litt, 1981; Steiner et al., 2011; Vichnin et al., 2006). Specifically, Hillen et al. (1999) found that 36% of their sample of Australian adolescents experienced limitations in school because of dysmenorrhea; Klein and Litt (1981) found that 14% of their sample of U.S. adolescents missed school because of menstrual cramps; and Banikarim et al. (2000) found that 18% of their sample of American-Hispanic adolescents reported school absence resulting from dysmenorrhea. Moreover, some adolescent girls limit their time with peers (Banikarim et al., 2000), and have difficulties in social activities and relationships (Hillen et al., 1999; Steiner et al., 2011; Vichnin et al., 2006), because of perimenstrual symptoms such as dysmenorrhea (see also DSM-IV criteria for PMDD; American Psychiatric Association, 1994). For example, Hillen et al. (1999) found that 36% of their sample experienced limitations in their social activities because of dysmenorrhea, and Banikarim et al. (2000) found that 20% of their sample went out less with their friends because of perimenstrual symptoms. Finally, research has repeatedly shown that, among adolescent girls, painful menstrual cycle-related symptoms result in decreased engagement in physical activities and sports (Banikarim et al., 2000; Hillen et al., 1999; Houston et al., 2006). For example, Hillen et al. (1999) found that 38% of their sample experienced limitations in participating in sports, and Banikarim et al. (2000) found that 17% of their sample reported limiting their engagement in sports, because of perimenstrual symptoms.

Given the above evidence it is clear that perimenstrual symptoms are associated with disengagement from daily activities across multiple domains. Although the presumption is that physical pain and discomfort are the most likely cause of behavioral disengagement, these behavioral changes could also be the result of social embarrassment for such symptoms as acne and weight gain. Although these different causes are important at a theoretical level, the present study does not test for these causal mechanisms, but rather examines the potential outcomes of the observed disengagement.

Overall, decreases in school participation, social engagement, and physical activity all point to changes in daily activities as a potentially important factor linking perimenstrual symptoms with individual adjustment during adolescence. Similar to past research, the present study will also focus on physical symptoms as a predictor of changes in daily activities. Thus, it is hypothesized that physical symptoms will lead to changes in daily activities which will then lead to negative psychological outcomes. That is to say, disengagement from these activities, because of perimenstrual physical symptoms, will have a psychological cost for the individual. For example, missing out on daily activities such as school, socializing with friends, and playing sports, may result in frustration and disappointment, leading to depressed mood and intensified mood swings. Disengagement from daily activities, especially physical activities, may also have negative effects on cognitive functioning such as concentration (see Taras, 2005 for a review on physical activity and academic performance).

Physical symptoms are hypothesized to influence psychological symptoms both directly and indirectly. The direct effects may be associated with what has been referred to as a *physical distress hypothesis* (Kiesner, 2009; Kiesner & Martin, 2013), in which increasing levels of physical pain and discomfort lead directly to increased levels of psychological distress, such as anxiety, depression, and cognitive focus, without necessary changes in daily life or social relations. Evidence for this theory is inconsistent (see Kiesner & Pastore, 2010), suggesting that other mechanisms are likely involved, such as indirect effects of physical symptoms leading to lower levels of engagement in school, sports, and social activities, that then leads to affective symptoms. Research has in fact shown that low levels of school engagement (Fröjd et al., 2008; Li & Lerner, 2011), sports

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