

Maternal depressive symptoms, hostility, and verbal fluency performance
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Depression is associated with neurocognitive (Okada et al., 2003) and social cognitive (Evraire, Ludmer, & Dozois, 2014; Lovejoy, 1991) deficits. For example, depressed individuals have impaired executive function, as evidenced by reduced performance on verbal fluency tasks (Henry & Crawford, 2005). Specifically, depressed individuals typically produce fewer words on tests of semantic fluency (Henry & Crawford, 2005). Depressed individuals have also been found to attribute interpersonal problems to stable, internal, and global causes (Abela, Auerbach, & Seligman, 2008), to have insecure attachment styles (Dozois & Beck, 2008; Evraire et al., 2014), and to interpret ambiguous social situations negatively (Dozois & Beck, 2008). Thus, depression has been characterized as a disorder of maladaptive interpersonal schemas, i.e., internal working models that are activated in daily situations and bias attention, motivation, and behaviour (Dozois & Beck, 2008). With regard to such biased behaviour, depression has been associated with hostile behaviours in interpersonal interactions (Schless, Mendels, Kipperman, & Cochrane, 1974). Such interpersonal hostility has itself been associated with reduced verbal fluency performance (Sutin et al., 2011) and negative social cognitions (Allred & Smith, 1991). However, despite these associations, the relationships between depression, hostility, executive function, and social cognition are currently unclear. Elucidating these relationships has important implications for psychotherapies targeting the interpersonal bases of depression (Moran, Bailey, & DeOliveira, 2008).

The current study sought to determine how depression and hostility interact to impact executive function and social cognition using a modified verbal fluency task. We utilized a community sample of 85 pregnant women, given the high incidence of depressive symptoms in this population in Canada (Davey, Tough, Adair, & Benzies, 2011), and the implications of such symptoms for children's development (Cummings, & Patrick, 1994; Molfese et al., 1987). Participants rated their depressive and hostile symptoms with the Brief Symptom Inventory (Derogatis & Melisaratos, 1983) prenatally, and verbal fluency was assessed at 6 and 12 months postpartum. Our modified, social-cognition-related verbal fluency task required listing as many words as possible that have to do with relationships within 60 seconds. In all analyses we controlled for standard verbal fluency ability (i.e., participants were asked to list as many words they could think of that have to do with work within 60 seconds).

Results revealed that, controlling for standard verbal fluency ability, participants higher in depressive symptoms (relative to participants lower in depressive symptoms) generated the fewest relationship-related words if they were low in hostility but the most relationship-related words if they were high in hostility. The depression-hostility interaction was replicated at both 6 ($p < .001$), and 12 ($p < .05$) months postpartum. Thus, the interpersonal schemas of individuals high in both depressive symptoms and hostility appear to be more readily primed and may have a particularly strong impact on thoughts, mood, and behavior, relative to individuals lower in depressive symptoms and/or hostility.

These results have important implications for psychotherapy. For example, cognitive behavioural therapy (CBT) may need to be supplemented with a special focus on relationships where individuals are depressed and hostile (Beck, 2011). Another possibility is that CBT may be ideal for high depressive, high hostile clients because interpersonal psychotherapy (IPT) may be more threatening to them (Swartz, Grote, & Graham, 2014). IPT therapists may also need to pay

particular attention to hostility in relations (Swartz et al., 2014). Future studies should also examine the role of hostility as a moderator of success of CBT versus IPT (Bruijniks et al., 2015; Power & Freeman, 2012). Finally, in terms of psychodynamic therapies, the current findings have significant implications for transference (Deitz, 1989), and hostility should be taken in to account.

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