THE NEUROPSYCHOLOGICAL CORRELATES OF DATING AGGRESSION:
INVESTIGATING THE ROLE OF EXECUTIVE FUNCTIONS IN DATING AGGRESSION

A dissertation submitted
to Kent State University in partial
fulfillment of the requirements for the
degree of Doctor of Philosophy

by

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INTRODUCTION

Dating aggression is a significant feature of adolescence and young adulthood. In fact, most individuals first experiences aggression from a romantic partner before the age of 24 years [Centers for Disease Control and Prevention (CDC), 2010a], and aggression towards a romantic partner peaks in late adolescence or early adulthood (see Capaldi et al., 2012 for discussion). These experiences within dating relationships socialize and set a precedence for behaviors in future relationships, in that aggression in dating relationships portends greater risk for subsequent aggression within romantic relationships throughout the lifespan (e.g., Capaldi, Shortt, Crosby, 2003; Makepeace, 1981; O’Leary & Slep, 2003; Smith, White, & Holland, 2003; O’Leary et al., 1989; Whitaker, Le, & Noilon, 2010; see Capaldi et al., 2003 and Whitaker et al., 2010 for exceptions). Moreover, these experiences bring significant consequences because dating aggression is associated with individual psychopathology and diminished romantic relationship functioning [e.g. CDC, 2006; CDC, 2012b; van Dulmen, Mata, & Klipfel, 2012; for review see Teten, Ball, Valle, Noonan, & Rosenbluth, 2009 and Shorey, Cornelius, & Bell, 2008]. Taken together, then, adolescence and young adulthood provides a critical timeframe to study and intervene on aggression directed at a romantic partner.
For the purposes of the current study, I adopted a comprehensive definition of *dating aggression*\(^1\)—psychological, physical, and sexual aggression occurring within the context of a dating relationship (e.g., Anderson & Danis, 2007; Shorey et al., 2008). This inclusive definition reflects the literature suggesting that subtypes of dating aggression tend to co-occur (Sears, Byers, & Price, 2007). Given that acts of dating aggression are inconsistently defined across studies, ranging in content, severity, and timeframe (see Foshee & Matthew, 2007 for review), operational definitions are provided. Psychological aggression (i.e., emotional and verbal abuse; Wolfe et al., 2001) includes acts such as bringing up a partner’s prior bad behaviors, saying things to make a partner angry, speaking in a hostile/mean voice, intent to cause jealousy, insults, ridiculing, tracking of one’s partner’s whereabouts, casting blame, accusations, and threats. Physical aggression (i.e., physical abuse, Wolfe et al., 2001) includes acts such as throwing things at a partner, kicking, hitting, punching, slapping, pulling hair, pushing, shoving or shaking one’s partner. Sexual aggression (i.e., sexual abuse, Wolfe et al., 2001) is defined as touching a partner sexually at an unwanted time, forcing a partner to have sexual intercourse, threatening a partner in an attempt to have sex with a partner, and kissing a partner who does not want to be kissed.

Dating aggression is a prevalent problem for adolescents and young adults. In a nationally representative sample, approximately 29% of adolescents and young adults had experienced psychological aggression (Halpern et al., 2001), and 40% of individuals had

\(^{1}\) The terminology “dating aggression” is used to describe aggression occurring between dating partners in adolescence and young adulthood, while “marital aggression” refers to aggression occurring later in life. Such a distinction is supported by census data indicating that the median age of marriage in 2011 was approximately 29 years of age for men and 27 years of age for women (U.S. Bureau of the Census, 2011). Thus, this terminology will be adopted for the remainder of the paper.
experienced physical and/or sexual aggression by the time of young adulthood (Halpern, Spriggs, Martin, & Kupper, 2009). Note, however, that community and college samples often provide higher estimates of psychological, physical, and sexual aggression (e.g., Abbey, Jacques-Tiura, & LeBreton, 2011; Klipfel & van Dulmen, 2012; Koss, Gidycz, & Wisniewski, 1987; Muñoz-Rivas, Graña, O'Leary, González, 2007; Smith et al., 2003; White & Koss, 1991), suggesting that dating aggression is a commonly occurring phenomenon in adolescence and young adulthood.

In addition, dating aggression is a pervasive concern across genders, in that both females and males are impacted by dating aggression. In general, aggression tends to be reciprocal between dating partners (e.g., Capaldi & Crosby, 1997; Fergusson, Horwood, & Ridder, 2005; Gray & Foshee, 1997; Jennings, Piquero, & Reingle, 2012; Whitaker, Haileyesus, Swahn, & Saltzman, 2007), and prevalence rates are estimated to be similar for females and males. More specifically, research suggests that females perpetrate psychological and physical aggression to an equal or greater degree than males throughout the lifespan (Archer, 2000; Archer, 2002; Foshee, 1996; Shook, Gerrity, Jurich, & Segrist, 2000; Hines & Saudino, 2003; Stets & Henderson, 1991), with the important caveat that males tend to inflict more physical injury than females (Archer, 2000; Muñoz-Rivas et al., 2007; Sears et al., 2007; Whitaker et al., 2007). It is also important to recognize that sexual aggression tends to be more commonly perpetrated by males (Foshee, 1996; Sears et al., 2007). Thus, both females and males are likely to be impacted by aggression within dating relationships.

**Theoretical Models of Dating Aggression**

While several theories of risk for dating aggression exist (see Shorey, Cornelius, & Bell, 2008 for review), few theories have emphasized the role of partner characteristics in risk for
dating aggression. Yet, recent reviews have argued that partner characteristics are essential to understanding dating processes (Collins, Welsch, & Furman, 2009), particularly for aggression (Bartholomew & Cobb, 2011; Capaldi & Langhinrichsen-Rohling, 2012). Due to increasing recognition, then, of the importance of partner characteristics (Capaldi & Langhinrichsen-Rohling, 2012; Kim & Capaldi, 1997; Klipfel & van Dulmen, 2012; O’Leary & Slep, 2003; O’Leary & Slep, 2012; White, Merrill, & Koss, 2001), the current study is guided by one such theory that incorporates both self and partner characteristics in understanding outcomes of aggression perpetrated towards a romantic partner—namely the lifespan dynamic developmental systems model of partner aggression (DDS; Capaldi & Gorman-Smith, 2003; Capaldi & Kim, 2007; Capladi, Kim, & Shortt, 2004; Capaldi, Shortt, & Crosby, 2003; Capaldi, Shortt, & Kim, 2005). According to the DDS theory, each individual’s characteristics (e.g., biology, individual features, contextual factors, and socialization experiences) and developmental stage are germane to outcomes of aggression as they evolve across time, domain, and within the relationship. Each member of a romantic dyad’s individual characteristics are relevant to and confer risk for dating aggression, in that individuals are likely to select partners with similar characteristics as themselves (e.g., assortative mating). Upon partnering, couples are subject to contextual risk factors (e.g., length of romantic relationship, substance use, low socioeconomic status, stressors), as well as intrapersonal factors (e.g., relationship satisfaction, poor emotion regulation, impulsivity). Within the relationship, these factors are dynamic and interactive, together conferring risk for aggressive interactions (Capaldi et al., 2005). Thus, both one’s own and one’s partner’s characteristics can have deleterious or protective effects within couple interactions.
The DDS model is supported by empirical literature (see Capaldi et al., 2005). For example, assortative mating, or the tendency to select partners with similar characteristics, has been documented in dating and married samples across a host of attitudinal, personality, psychiatric, and developmental features (e.g., Blackwell & Lichter, 2004; Bleske-Remiker, Remiker, & Baker, 2009; Capaldi & Crosby, 1997; Kim & Capaldi, 2004; Luo & Klohnen, 2005; Merikangas, 1982; Klipfel & van Dulmen, 2012). Moreover, acts of dating aggression are often reciprocal, in that individuals are likely to be both victims and perpetrators of dating aggression (Capaldi & Crosby, 1997; Gray & Foshee, 1997; Jennings, Piquero, & Reingle, 2012; Whitaker, Haileyesus, Swahn, & Saltzman, 2007; Klipfel & van Dulmen, 2012). For example, in a study of young adults, the concordance rate for being both a perpetrator and a victim of aggression within a romantic relationship exceeded 90% (Fergusson, Horwood, & Ridder, 2005). Taken together, dating partners are likely to select, or have access to, partners with similar characteristics, which often contributes to mutually aggressive interactions (e.g., Capaldi et al., 2005). Thus, risk factors of both self and partner contribute risk for dating aggression perpetration.

**Executive Functions**

One individual characteristic that may have dyadic influences on outcomes of dating aggression is executive functioning abilities. For this reason, it was the purpose of the current study to propose and examine executive functions as these abilities relate to dating aggression. As guided by the DDS model (e.g., Capaldi et al., 2005), I hypothesized that both self and partner executive functions are relevant to outcomes of dating aggression, in that executive functions may serve as a protective factor from aggressive interactions wherein both one’s own and one’s partner’s well-developed executive functions may insulate from aggressive
interactions. Stated another way, it is probable that impaired executive functions may serve as a risk factor for dating aggression, in that individuals with impaired executive functions may experience difficulty coping with relationship stressors and problem-solving, thereby increasing the likelihood for aggressive interactions. While executive functions have been theorized to be implicated in dating aggression (Jouriles, McDonald, Mueller, & Grych, 2012), few empirical studies have examined executive functioning difficulties as a risk factor for dating aggression. In fact, after reviewing the literature, it appears that only a single research study has examined this association (see Finkel et al., 2012 below). Thus, the current study aimed to investigate the potential utility of executive functions in predicting outcomes of dating aggression.

**Definition.** Executive functions are widely defined, with no clear consensus reached in regard to a standard definition (see Zelazo & Müller 2010 or Suchy, 2009 for reviews). Unitary conceptualizations may not fully capture the complexity of executive functions (e.g. Miyake, Friedman, Ermerson, Witzki, & Howarter, 2000; Zelazo & Müller, 2002; Zelazo & Müller, 2010). For the purposes of this study, a widely utilized, empirically derived, multicomponent definition was adopted. Using confirmatory factor analysis techniques, Miyake et al. (2000) derived three separate but correlated subcomponents of executive functions: shifting between mental tasks (i.e., shifting), updating and monitoring information in the working memory (i.e., updating), and inhibition of prepotent reactions (i.e., inhibition). Shifting can be defined as the ability to shift attentional capacities between mental operations (Monsell, 1996; Miyake et al., 2000). Updating abilities involve monitoring, encoding, manipulating, and revising information relevant to the current task (Morris & Jones, 1990; Miyake et al., 2000). Finally, inhibition is defined as one’s ability to purposefully inhibit dominant or automatic responses when beneficial
in a given situation (Miyake et al., 2000). Thus, executive functions are defined for the purposes of this study as one’s mental shifting, updating, and inhibition abilities (see Miyake et al., 2000).

Executive functions have implications for a distinct set of everyday, goal-directed behaviors by way of “psychological processes involved in the conscious control of thought and action” (Zelazo & Müller 2010, p. 575; Welsh et al., 1991). While lists of psychological processes and behaviors that are associated with executive functions are numerous, a review of several studies of executive functions conducted by Tranel, Anderson, and Benton (1994; as cited by Zelazo & Müller 2010) refined a list of executive functions that consist of planning, decision-making, judgment, and self-perception across proposed behaviors. Deficits, then, in executive functions can lead to “apathy; emotional lability; anticipating, planning, and sequencing deficits; deficiencies in initiating behavior; deficits in monitoring behavior; problems in shifting, adapting, and stopping behavior; and deficient abstract reasoning” (Hawkins & Trobst, 2000, p. 150). Therefore, executive functions have implications for a distinct and important set of everyday behaviors.

Executive functions have been localized within several neuroanatomical structures of the brain that continue to develop into adulthood. Specifically, executive functions are generally associated with prefrontal cortex functioning (Brower & Price, 2001; Luria, 1966; Miller & Cohen, 2001; Stuss, 1992)—although not exclusively in that the integrity of other brain circuits is vital to executive functioning performance (see Zelazo & Müller, 2002; Paschall & Fishbein, 2002; Suchy, 2009). Research has suggested that executive functions continue to improve in adolescence (e.g., Blakemore & Choudhury, 2006; Steinberg, 2008) and young adulthood (e.g., De Luca et al., 2003; Romine & Reynolds, 2005; Diamond, 2002; Center on the Developing
Child at Harvard University, 2011). This improvement throughout adolescence and young adulthood is evident both in the neuroanatomical structures of the brain, as well as functional abilities and behaviors. For example, the process of myelination in the frontal cortex has been documented to occur into adulthood (e.g., Yakovlev & Lecours, 1967; Sowell, Thompson, Tessner, & Toga, 2001). Moreover, in a longitudinal study examining the development of cognitive abilities throughout the lifespan, De Luca, Wood, Anderson, Buchanan, Mahony, and Pantelis (2003) found that functional gains occur in executive functions between the age of 15 and 19 years and again between the age of 20 and 29 years (De Luca et al., 2003; see Romine & Reynolds, 2005 for meta-analysis documenting gains in frontal lobe functioning into adulthood), perhaps peaking between the age of 20-29 years. Moreover, there is evidence that shifting, updating, and inhibition abilities show variability in their development across childhood into adulthood (e.g., Huizinga, Dolan, & van der Molen, 2006; Lee, Bull, & Ho, 2013; Romine & Reynolds, 2005; Center on the Developing Child at Harvard University, 2011). Therefore, developmental considerations are warranted in the study of executive functions as adolescence through young adulthood represents a unique period of time in terms of the development of executive functions.

Several features of executive functions are germane to this study. In particular, Séguin, Boulerice, Harden, Tremblay, and Pihl (1999) reviewed the features that are noteworthy in regard to perpetration of aggression. They stated that executive functions “operate within a limited-capacity system” of resources (Séguin et al., 1999, p. 1198; Welsh & Pennington, 1988; Schmeichel, 2007) and require intentional effort. This is particularly true in regard to novel stimuli (Zelazo, Carter, Reznick, & Fry, 1997) and in high demand contexts (Stuss, 1992; as
cited by Séguin et al., 1999). Thus, executive resources can be exhausted due to environmental factors (e.g., stress, sleep deprivation, alcohol use, and conflict; Paschall & Fishbein, 2002). Therefore, executive functions are likely to be compromised in the stressful and high demand situations during which conflict and aggression among dating partners is likely to occur.

Finally, impairments in executive functions can include both clinical and subclinical levels of impairment (see Paschall & Fishbein, 2002). Clinical impairment typically results from damage to the brain, most often by means of injury. This is important because impulsive children are susceptible to more injuries (Schwebel, 2004). Furthermore, injury inflicted by a romantic partner is particularly relevant to the origin of executive dysfunction in dating partners, because those that perpetrate dating aggression tend to be victims themselves (Gray & Foshee, 1997; Whitaker et al., 2007; Straus & Ramirez, 2007). Alarmingly, injury is reported by 42% of female and 14% of male victims of aggression perpetrated by a romantic partner (CDC, 2010). Therefore, head injury and associated clinical impairments in executive function can result from previous aggressive interactions with a romantic partner. By contrast, subclinical impairments in executive functions are not overtly apparent and can arise from several influences, which can include “hereditary, behavioral, and environmental factors” (Paschall & Fishbein, 2002, p. 216; e.g., nutrition, neglect, alcohol, psychopathology, age-normative differences, exposure to aggression). Note, however, that most subclinical impairments and individual differences in executive functioning abilities arise from genetic factors (Friedman, Miyake, Young, DeFries, Corley, & Hewitt, 2008; Miyake & Friedman, 2012). Taken together, then, individual differences in executive functions in adolescents and young adults arise from a variety of sources that include commonly assumed factors, such as injury and genetic factors. Yet, adolescents also
display executive functions that are less well developed than older populations. While the
delineation between clinical and subclinical impairment is useful in regard to understanding
etiology of executive dysfunction, research has suggested that even subclinical impairments in
executive functions are associated with maladaptive behaviors (Hawkins & Trobst, 2000; Moffitt
& Henry, 1989; Séguin, Pihl, Harden, & Tremblay, 1995; Séguin & Zelazo, 2005), including
increased risk for aggression (Giancola & Zeichner, 1994; Séguin et al., 1995; Lau, Pihl, &
Peterson, 1995; Stanford, Greve, & Gerstle, 1997; see Hawkins & Trobst, 2000 and Paschall &
Fishbein, 2002). For this reason, impairments and dysfunction are used inclusively.

In summary, executive functioning is defined for the purposes of this study as the ability
to shift attention, update mental representations, and inhibit automatic responses. These cognitive
abilities can account for a broad—but distinct—set of behaviors. Executive functions are largely
associated with prefrontal structures that are not fully developed in adolescence and may
continue to develop into young adulthood. Moreover, given that executive functions are limited
in capacity and resource, situations that are novel or highly taxing may result in difficulty with
shifting, updating, and inhibiting one’s thoughts, emotions, and behaviors. Finally, executive
functions can be impaired by a variety of factors. Taken together, adolescents show varied in
development in their shifting, updating, and inhibition abilities into adulthood, making this
population unique and worthy of further investigation.

Executive Dysfunction and General Aggression

While executive functions have largely been neglected as a risk factor for dating
aggression, models of risk for general aggression are a useful foundation for understanding how
impairments in executive functions create a propensity towards aggressive interactions. General
aggression literature provides insight on risk for dating aggression because individuals who perpetrate general forms of aggression also tend to perpetrate dating aggression (Ozer, Tschann, Pasch, & Flores, 2004; Bossarte, Simon, & Swahn, 2008; Swahn et al., 2008). Indeed, the general aggression literature suggests that impaired executive functions have direct implications for an individual’s tendency to engage in aggression.

Theoretical models of general aggression have incorporated impaired executive functions as a risk factor for aggression (e.g., Moffitt, 1993b; Paschall & Fishbein, 2002). In support of theory, a large body of empirical literature indicates that impaired executive functions are associated with general aggression in adolescence and young adulthood (e.g., Barker et al., 2011; Golden, Jackson, Peterson-Rohne, & Gontkovsky, 1996; Hawkins & Trobst, 2000; Hancock, Tapscott, & Hoaken, 2010; Moffitt & Henry, 1991, Morgan & Lilienfeld, 2000; Séguin et al., 1995; Séguin et al., 1999; Séguin, Nagin, Assaad, & Tremblay, 2004; Stanford et al., 1997; see Séguin, Sylvers, Lilienfeld, 2007). This association is often examined in terms of psychopathology associated with general aggression (i.e., conduct disorder, antisocial behaviors). For example, Moffitt and colleagues (Moffitt, 1993a; Moffitt & Henry, 1989) have long theorized that “neuropsychological measures are related to some of the best indicators of poor outcome for children with conduct symptoms, such as early onset, stability across time, hyperactive symptoms, and aggressiveness” (Moffitt, 1993a, p. 1). In direct support of this concept, meta-analyses have revealed medium to large effects in the association between executive dysfunction and outcomes of conduct disorder and antisocial behaviors across adolescence and adulthood (Morgan & Lilienfeld, 2000; Ogilvie, Stewart, Chan, & Shum, 2011).
Yet, the association between executive functions and conduct/antisocial disorders has been refined to aggressive behaviors, specifically (e.g., Séguin, Sylvers, & Lilienfeld, 2007). For example, Barker and colleagues (2007) examined the neuropsychological correlates of physical aggression as compared to theft. In a community sample of males, followed from early adolescence into adulthood, verbal intelligence and executive functions negatively predicted more frequent physical aggression but not theft (Barker et al., 2007). Furthermore, Hancock et al. (2010) found that impaired executive functions predicted greater frequency and severity of aggressive offenses (e.g., assault, rape, homicide) as compared to nonaggressive offenses in a male, incarcerated sample (age range = 19-57 years). These findings, wherein impaired executive functions are uniquely associated with aggressive behaviors, have been confirmed in adolescent samples of males with conduct disorder (e.g., Miura, 2009) and adolescent samples of females with conduct disorder (Giancola, Mezzich, Tarter, 1998; see Barker et al., 2011 and Hancock et al., 2010). Therefore, executive dysfunction is particularly relevant to understanding risk for aggression.

In addition, there is evidence to suggest that executive dysfunction predicts general aggression across community samples. In fact, Hawkins and Trobst (2000) state that the most conclusive evidence for the role of executive dysfunction as risk factor for general aggression comes from normative samples without history of head injury. For example, Giancola and Zeichner (1994) examined the relationship between executive dysfunction and general aggression in a community sample of men (Mage = 22 years) without past or current substance abuse, learning disabilities, history of psychopathology, and head injury. Even when these factors are accounted for, a significant association remained among executive dysfunction and
general aggression. Moreover, Séguin et al. (1999) demonstrated that the association between executive dysfunction and physical aggression remained regardless of attention-deficit/hyperactivity disorder (ADHD) and intelligence in adolescent males. Similar findings have also been replicated in normative, college samples of females and males (Stanford et al., 1997), as executive dysfunction was confirmed to be associated with impulsive, general aggression. It is important to note that this association is not accounted for by language abilities (Villemarette-Pittman, Stanford, Greve, 2003). Therefore, executive dysfunction confers risk for general aggression in adolescent and young adult samples above and beyond known correlates of executive dysfunction.

Finally, neuropsychiatry has established that functional impairments in the frontal lobes of the brain are implicated in general aggressive behaviors (Raine, 1994; Raine, 1998; Bower & Price, 2001). For example, a review conducted by Bufkin and Luttrell (2005) confirmed that frontal lobe dysfunction is observed in aggressive behaviors—particularly for impulsive offenders. Moreover, prefrontal cortex dysfunction is associated with conduct disorder in children and adolescents (e.g., Rubia, Halari, Smith, Mohammad, Scott, & Brammer, 2009; see Sterzer and Stadler, 2009 for review). Therefore, structural and functional impairments in frontal lobe functioning associated with executive dysfunction are observed in generally aggressive individuals throughout development.

Taken together, then, both theory and research on general aggression support the role of executive dysfunction as a risk factor for aggression perpetration. As aforementioned, because adolescents and young adults who perpetrate general aggression also perpetrate dating aggression (Ozer et al., 2004; Bossarte et al., 2008; Swahn et al., 2008), dating aggression is
likely subject to the same risk factors as general aggression. For this reason, executive
dysfunction is a probable risk factor for both general and dating aggression perpetration.

**Executive Dysfunction and Marital Aggression.**

Not only is general aggression literature relevant to the current study, but marital
aggression literature is also relevant to understanding risk for dating aggression. Literature
investigating risk for marital aggression is directly relevant to the dating aggression literature
because the risk factors for dating and marital aggression overlap (Sugarman, & Hotaling, 1989;
O’Leary, Malone, & Tyree, 1994). This is quite intuitive because many of the individuals who
perpetrate aggression towards their marital partners were aggressive toward romantic partners
before marriage (e.g., O’Leary, Barling, Arias, Rosenbaum, Malone, & Tyree, 1989). Thus,
marital research can inform the field of dating aggression—particularly regarding the role of
neuropsychological risk factors that have been largely neglected in dating aggression literature.
Marital aggression literature has increasingly recognized the role of executive functions in the
perpetration of marital aggression (e.g., Howard, 2012; see Pinto et al., 2010 for review). In what
follows, extant research investigating the association among executive dysfunction and marital
aggression is summarized, with attention to both perpetration and victimization, as these dyadic
influences are predicted by the DDS theory (Capaldi et al., 2005).

**Marital aggression perpetration.** Empirical support for the association between
cognitive dysfunction and marital aggression perpetration is reviewed in what follows, focusing
first on research conducted in head injured populations. Next, evidence for the specific utility of
executive functions in understanding risk for marital aggression perpetration is provided. Finally,
research investigating the influence of executive dysfunction on marital aggression within dyads is reviewed.

**Head injury and marital aggression perpetration.** First, it is important to note that research has documented an association among head injury and marital aggression perpetration (Cohen, Rosenbaum, Kane, Warnken, & Benjamin, 1999; Cohen, Brumm, Zawacki, Paul, Sweet, & Rosenbaum, 2003; Marsh & Martinovich, 2006; Rosenbaum & Hoge, 1989; Rosenbaum, Hoge, Adelman, Warnken, Fletcher, & Kane, 1994; Turkstra, Jones, & Toler, 2003; Warnken, Rosenbaum, Fletcher, Hoge, & Adelman, 1994). Indeed, a meta-analysis conducted by Farrer, Frost, and Hedges (2012) confirmed higher rates of head injury in maritally aggressive men (53%) when compared to the general population. Notably, head injury often temporally precedes perpetration of marital aggression (Rosenbaum et al., 1994), and this association holds in populations that span young adulthood (Rosenbaum & Hoge, 1989). Moreover, head injury is associated with psychological and physical marital aggression without preclusion of sexual aggression (e.g., Warnken et al., 1994; Rosenbaum et al., 1994; Cohen et al., 1999). In addition, the relationship between head injury and marital aggression has been confirmed using cross-informant data, in that Warnken et al. (1994) demonstrated that males’ head injury was associated with impaired relationship quality and an increased propensity for general aggression and psychological marital aggression—although an important caveat is that cross-informant reports from female partners were necessary to detect increases in psychological aggression. Taken together, the association between head injury and marital aggression is robust across studies, ages, and subtypes of marital aggression—thereby providing evidence that general cognitive dysfunction associated with head injury predicts marital aggression perpetration.
Executive dysfunction and marital aggression perpetration in head injured populations. While head injury has been demonstrated, then, to be associated with marital aggression, there is evidence to suggest that impairments in executive functions may co-occur with head injury and marital aggression. For example, Marsh and Martinovich (2006) demonstrated that aggressive men have a greater degree of head injury, lower overall intelligence, and impaired executive functions. In their study, 38 males (Mage = 34 years) with a history of criminal conviction for marital aggression were recruited for study participation from a marital aggression treatment program. Cognitive functioning was assessed using a neuropsychological assessment battery, including assessment of premorbid intelligence, current verbal and nonverbal intelligence, and executive functions [Behavioral Assessment of the Dysexecutive Syndrome (BADS; Spreen & Strauss, 1998, Wilson et al., 1996) and the Hayling and Brixton tests (Burgess & Shallice, 1997)]. Results indicated that—despite having matched participants on age, premorbid intelligence, self-esteem, and alcohol use—head injury was associated with lower current overall intelligence and impaired executive functions as compared to non-head injury. This association held across two of the three measures of executive functions—specifically, the Hayling and Brixton tests but not for the BADS (Marsh & Martinovich, 2006).

Similarly, in a cross-informant study, Walling, Meehan, Marshall, Holtzworth-Munroe and Taft (2012) investigated the role of intelligence, head injury, and executive functions in outcomes of physical and psychological marital aggression. Here, 102 aggressive men and their romantic partners (married or cohabiting partners) and 62 non-aggressive controls (23 non-aggressive/distressed and 39 non-aggressive/non-distressed) were recruited for study
participation ($M_{age} = 36$ years). Men were classified as non-aggressive based upon both self and partner’s denial of lifetime occurrence of severe physical marital aggression and denial of physical aggression within the five years prior to data collection. Physical and psychological subtypes of aggression were assessed using the Revised Conflict Tactics Scale (CTS-2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996), as indicated by the highest frequency of report in the past year by either the male or his romantic partner on the scale. Head injury, verbal intelligence, abstract intelligence, and executive functions [Trail Making Test Form B (Lezak et al., 2004), Wisconsin Card Sorting Test (WCST; Heaton, 1981), and Symbol Digit Modalities Test (SDMT; Smith, 1991)] were also assessed. Correlations indicated that impaired WCST performance was associated with greater frequency of physical aggression perpetration, although these results did not hold when other factors (e.g., sociodemographics, head injury, verbal intelligence) were considered or for psychological aggression perpetration. However, when severity of aggression was taken into account, the most aggressive group was impaired on verbal intelligence, and severely aggressive men were also more likely to evidence head injury and clinical impairments in executive functions (i.e., WCST) and abstract intelligence. It is important to note that head injury status was not associated with cognitive abilities, suggesting that head injury could not account for cognitive performance. Thus, this study partially supports the role of executive functions in outcomes of marital aggression. Note, however, that the non-aggressive men who served as controls in this study were not excluded based on perpetration of psychological aggression or physical aggression beyond five years prior to study. Therefore, given the tendency for subtypes of aggression to co-occur and for aggression to decrease later in life (Sears et al., 2007; O’Leary, 1999), these results should be interpreted somewhat cautiously.
Cohen and colleagues (1999) further illustrated that impairments in executive functions may be a mechanism that explains the relationship between head injury and marital aggression. Here, 39 maritally aggressive men ($M_{age} = 33$ years), many of whom were recruited through a psychotherapy program, were compared to 63 non-aggressive controls ($M_{age} = 35$ years) divided into two groups: 1) maritally satisfied and 2) maritally discordant. Results indicated that aggressive men evidenced greater deficits in cognitive abilities (verbal ability, learning/memory, attention, executive functions), greater head injury, less education, lower income, greater childhood academic problems, and more emotional distress. Alcohol use did not differentiate groups, but aggressive men reported that they were more likely to become aggressive when consuming alcohol than non-aggressive men. Importantly, impairments on the Digit Symbol (Wechsler, 1981) and WCST (Heaton, 1981) tasks were among the strongest and most reliable indicators that discriminated aggressive from non-aggressive groups. The authors conclude that impairments in executive functions are among the strongest cognitive predictors of marital aggression perpetration. Further, head injury was not associated with neuropsychological performance on the WCST or Digit Symbol tasks (Cohen et al., 1999), again suggesting that executive functioning deficits may contribute to outcomes of marital aggression net of head injury.

In a follow-up study, Cohen et al. (2003) further explored cognitive impairments and marital aggression, with attention to the role of impulsivity in this association. Here, matched groups ($M_{age} = 33$ years; matched on age, level of education, and socioeconomic status) of aggressive men ($n = 41$) and non-aggressive controls ($n = 20$) were recruited through treatment groups and advertisements, respectively. Among several other measures, a neuropsychological
battery was administered that included measures of overall intelligence, verbal abilities, impulsivity, and executive functioning and attention abilities. Results indicated that aggressive and non-aggressive males were not differentiated by emotional distress, anger, or current alcohol/drug use, although aggressive males endorsed more childhood behavioral problems, learning disorders, and head injury. Note, however, that head injury status was again not associated with differences in neuropsychological performance among aggressive males. In regard to neuropsychological measures, aggressive males performed more poorly on verbal tasks than non-aggressive males, but performances were similar in terms of overall intelligence and nonverbal tasks. Moreover, aggressive males performed more poorly on attention tasks and evidenced greater executive dysfunction on the Trail Making Test Form B (Lezak, 1995), Stroop Interference Trial (Golden, 1978), PASAT (Gronwall, 1977), and Digit Symbol (Wechsler, 1981) tasks than non-aggressive males. In regard to impulsivity measures, aggressive men—as predicted—performed more poorly on the majority of impulsivity measures than non-aggressive males [Porteus Mazes Response Breaks (Poretus, 1965); Motor Continuation and Time Estimation of the Walter Reed Performance Assessment Battery (Thorne, Genser, Sing, & Hegge, 1985); False Positive Errors on the ARCPT (Cohen, 1993)]—indicating poorer impulse control among aggressive men. The authors conclude that mild frontal lobe deficits (i.e., executive dysfunction and impulsivity), as well as deficits in verbal abilities, are relevant to marital aggression perpetration. Put another way, impairments in executive functions, including impulsivity, are among several social and cognitive factors that contribute to marital aggression perpetration. Note, here, that these findings contrasts to Marsh and Martinovich’s (2006)
findings in that overall impairment in intelligence was not observed in aggressive males and did not account for the association between executive functions and marital aggression.

*Executive dysfunction and marital aggression perpetration in non-head injured populations.* The reviewed literature suggests the contribution of head injury and executive dysfunction to marital aggression, but the work of Cohen and colleagues (1999; 2003) and Walling et al. (2012) alludes to the possibility that impaired executive functions may also predict marital aggression in populations without history of head injury. Indeed, Westby and Ferraro (1999) confirmed that individual differences in executive functions contribute to marital aggression. More specifically, Westby and Ferraro (1999) investigated the role of impaired executive functions in marital aggression perpetration among a sample of men ($M_{\text{age}} = 33$ years) free from head injury and neurological illness. Here, 38 aggressive men were recruited through a marital aggression treatment program, while 38 non-aggressive men—matched for age and education—were recruited through advertisement. Men with a self-reported history of head injury or neurological illness were not included in the study. Neuropsychological measures of executive functions included the WCST (Berg, 1948; Heaton, 1981), Stroop Color-Word Association Test (Stroop, 1935), Trail Making Test (Reitan & Davison, 1974), and Crossing-Off Test (Birren & Botwinick, 1951). Results indicated that aggressive men demonstrated impaired vocabulary (i.e., verbal intelligence) and more severe alcohol problems. When verbal intelligence and alcohol abuse were controlled for, aggressive men tended to perform more poorly on the Trail Making Test Form B. While impairments were not evident on the remaining neuropsychological measures, the impairments displayed by aggressive men on the Trail Making Test Form B are indicative of executive dysfunction. Again, support is found for the role of
executive dysfunction in marital aggression perpetration, even when substance abuse, verbal intelligence, and head injury do not confound the association. It is also important to note that in a follow-up study utilizing this same sample, Corvo, Halpern, and Ferraro (2006) found that impairments in executive functions (i.e., Trail Making Test and WCST) were observed in frequently and severely aggressive men as compared to less severely aggressive men.

In another study, Teichner, Golden, Van Hasselt, and Peterson (2001) examined the degree of cognitive impairment among men convicted of marital aggression without considering head injury rates. Here, 50 men convicted of marital aggression were recruited through treatment groups, while a convenience sample of 23 control participants was recruited at a college campus. Teichner and colleagues administered a neuropsychological battery that assessed general cognitive abilities across several domains. While executive functions were not the specific focus of this study, several of the tests are considered measures of executive functions [Stroop Color-Word Association Test (Golden, 1978) and Trail Making Test (Davies, 1968, Reitan, 1955)]. Based upon performance across neuropsychological measures, participants were classified as cognitively impaired if two or more scores on any of the measures were in the impaired range based on established cut-off scores. Results indicated that 48% of aggressive men were cognitively impaired, while only 4% of control participants were impaired (Teichner et al., 2001). On the Trail Making Test Form B and Stroop Color-Word Association Test, this equated to 40% and 48% of aggressive men performing in the cognitively impaired range as compared to 9% and 13% of control participants, respectively. Therefore, clinical levels of impairment in cognitive functioning, including impairments in executive functioning, are associated with marital aggression perpetration.
In addition, in a single research study investigating the neurophysiology of marital aggression, Stanford, Conklin, Helfritz, and Kockler (2007) confirmed that executive and physiological dysfunction are evident in perpetrators of marital aggression. Here, Stanford and colleagues (2007) administered both neuropsychological and neurophysiological measures to 18 men (Mage = 36 years; three with history of head injury) convicted of marital aggression and 18 non-aggressive controls (Mage = 31 years). Executive functions were assessed using the Trail Making Test (Reitan & Wolfson, 1985) and the WCST (Heaton, Chelune, Talley, Kay, & Curtis, 1993). In addition, using electrodes, neurophysiological recordings of event-related potentials were assessed at the midline scalp electrode site of the brain. Specifically, P3b amplitude was assessed as manipulated by an auditory attention task. P3b is a positive wave of the parietal region of the brain. Low levels of these waves, as a response to auditory attention task, are implicated in impulsive, general aggression. Results indicated that aggressive men demonstrated more errors on the Trail Making Test Form B and Failure to Maintain Set on the WCST. Moreover, aggressive men demonstrated lower P3b amplitude than non-aggressive men. Taken together, the authors conclude that both neuropsychological and psychophysiological measures confirm that executive dysfunction is associated with marital aggression perpetration.

Dyadic investigations of executive dysfunction and marital aggression perpetration.

Importantly, as predicted by the DDS model (e.g., Capaldi et al., 2005), there is some evidence to suggest that one’s own impaired executive functions may increase the likelihood of both one’s own and one’s romantic partner’s engagement in aggression. For example, Schafer and Fals-Stewart (1997) confirmed that individual differences in executive functions contribute to marital aggression using dyadic reports. In this study, Schafer and Fals-Stewart (1997) recruited 31 men
(Mage = 33 years) recovering from multiple substance abuse. Men had been abstinent from substance use for three weeks to one year and had no history of head injury or neurological disease. Marital aggression was assessed with the Conflict Tactics Scale (Straus, 1979) as per both husband and wife report. Results of partial correlations demonstrated that aggressive men evidenced more executive dysfunction across tasks [i.e., Stroop Color-Word Association Test (Golden, 1978), Booklet Category Test (DeFilippis & McCampbell, 1997), and Trail Making Test Form B (Lezak, 1995)] and impairments on verbal tasks in comparison to non-aggressive men, when controlling for affective (i.e., depression, anxiety, anger) and demographic variables. This held across cross-informant reports of total couple, husband-to-wife, and severe husband-to-wife aggression. Therefore, executive dysfunction can be considered a risk factor for mutual aggression and aggression ranging in severity—even in populations free from head injury.

In addition, Schafer, Birchler, and Fals-Stewart (1994) demonstrated that the association between executive dysfunction and dyadic marital aggression can be extended to psychological aggression. Schafer et al. (1994) utilized the previously described sample (i.e., Schafer & Fals-Stewart, 1997) of 31 married couples recruited due to males’ substance abuse history, without history of head injury. Men were assessed across affective variables (i.e., depression, anxiety, anger), marital adjustment (e.g., level of distress and change necessary to improve marriage), neuropsychological functioning, aggression, and observed marital communication (e.g., positive and negative communication). After controlling for demographic factors (e.g., husband age, education, relationship length), males’ impaired performance on executive functioning tasks [i.e., Trail Making Test Form B (Lezak, 1995) and the Booklet Category test (DeFilippis & McCampbell, 1997)] was associated with the couples’ communication. Note, that these variables
accounted for unique variance above and beyond affective variables, such that impairments in neuropsychological performance largely predicted more negative communication (e.g., put downs, taking less responsibility) for males and their romantic partners. Moreover, males’ neuropsychological performance, including impaired verbal abilities and executive dysfunction [Stroop Color-Word Association Test (Golden, 1978), Trail Making Form B (Lezak, 1995)], as well as depression and anxiety, predicted self and partner marital aggression as measured on the CTS (Straus, 1979). Therefore, impairments in males’ executive functions predict both males’ own and their partners’ use of psychological and physical aggression within married couples.

**Marital aggression victimization.** Relatedly, in support of the DDS model (e.g., Capaldi et al., 2005), there is evidenced to suggest that female victims of marital aggression evidence executive dysfunction that cannot be attributed to head injury or symptoms of PTSD associated with aggression victimization. For example, in a study conducted by Stein, Kennedy, and Twamley (2002), 39 female victims of physical and/or sexual aggression—17 with current PTSD (Mage = 34 years) and 22 without lifetime presence of PTSD (Mage = 35 years)—were recruited through advertisement. Twenty-two women without history of trauma (Mage = 29 years) were recruited as control participants. Women were matched on age, education, and socioeconomic status and were excluded from study participation if they endorsed an extensive substance abuse history, drug/alcohol abuse in the past year, head injury, neurologic disorder, seizure disorder, current psychotropic medication or steroid use, psychotic illness, learning disability, ADHD, were still in the aggressive relationship, or were non-native English speakers. The CTS-2 (Straus et al., 1996) was used to assess marital aggression across subtypes of aggression (i.e., Negotiation, Psychological Aggression, Physical Assault, Sexual Coercion, and Injury). Stein
and colleagues (2002) assessed verbal learning and memory, visuoconstruction and visual memory, language, attention and working memory, psychomotor speed, and executive functioning [Trail Making Test Form B (Lezak, 1995), Category Test (Reitan & Wolfson, 1993), Stroop-Color Word Interference Test (Golden, 1978), and the Organization score of the Rey-Osterreith CFT (Deckersbach et al, 2000)]. Focusing on results concerning executive functions, female victims with PTSD were significantly more impaired than control participants on the Trail Making Test Form B, and the performance of victims without PTSD fell between these groups’ performances. Female victims evidenced a greater degree of impairment in executive functions as measured by the Category Test, although only victims without PTSD were significantly more impaired than control participants. Victims with and without PTSD demonstrated significantly more impairment in executive functions on the Stroop-Color Word Interference Test than control participants. Severity of PTSD, depression, dissociation, and aggression were not associated with impaired performance on cognitive measures. The authors state that participants with PTSD were nearly two standard deviations below the expected level on the Trail Making Test, and these scores fall into the mildly/moderately impaired range. Yet, they note that mild impairments in a laboratory setting may underestimate the significant consequences that occur in everyday functioning under stress “because real-world situations involve more complex processing demands in the context of increased distraction in the environment” (Stein et al., 2002; p. 1085; Note, the interested reader is directed to Twamley, Allard, Thorp, Norman, Cissell, Berardi, Grimes, & Stein, 2009 for discussion of the impact of processing speed on similar associations). Taken together, then, this study illustrates that executive functions are meaningfully impaired in victims of marital aggression and alludes to the
possibility that impairments may occur regardless of head injury, substance use, or psychopathology. Thus, those receiving acts of aggression may evidence characteristics—namely impairments in executive functions—that place them at risk for victimization.

In addition, structural changes that accompany female victimization have been documented as they impact executive dysfunction (Fennema-Notestine, Stein, Kennedy, Archibald, & Jernigan, 2002). In this study, female victims (Mage = 33-35 years) of marital aggression, including psychological, physical, and sexual aggression as measured by the CTS-2 (Straus et al., 1996), were recruited through community service centers specializing in domestic violence. Victims of marital aggression were found to display smaller frontal gray matter volumes as compared to non-victim female control subjects. This frontal gray matter volume loss was in turn negatively associated with performance on a task of executive functions (i.e., Trail Making Test B). It is notable that many of the victims of marital aggression also had experienced childhood abuse. For this reason, these reductions in frontal gray matter may have predated marital aggression. Therefore, some evidence has been provided for structural abnormalities that contribute to executive dysfunction in female victims of marital aggression which may predate the onset of marital aggression, perhaps placing females at risk for victimization in their intimate relationships (see Fennema-Notestine et al., 2002).

**Summary of marital aggression literature.** In summary, several trends are evident across studies investigating the association between executive dysfunction and marital aggression. First, head injury, sociodemographic characteristics, affective variables, psychopathology, substance abuse, verbal abilities, intelligence, and executive dysfunction are associated with outcomes of psychological, physical, and sexual aggression perpetration and
victimization across studies and across ranges of frequency and severity of aggression. However, there is some evidence to suggest that the association between executive dysfunction and marital aggression remains irrespective of sociodemographics (e.g., Cohen et al. 2003; Schafer & Fals-Stewart, 1997; Schafer et al., 1994), current alcohol use (e.g., Cohen et al., 1999; Cohen et al., 2003; Westby & Ferraro, 1999), psychopathology including ADHD and PTSD (e.g., Stein et al., 2002), relationship satisfaction (e.g., Cohen et al., 1999), affective variables (e.g., Cohen et al., 2003; Schafer & Fals-Stewart, 1997; Schafer et al., 1994), intelligence (Cohen et al., 2003; Westby & Ferraro, 1999), and head injury (Westby & Ferraro, 1999; Schafer & Fals-Stewart, 1997; Schafer et al., 1994; Teichner et al., 2001). Thus, executive dysfunction is one of the most robust correlates of marital aggression across the reviewed studies.

Moreover, the relationship between executive dysfunction and marital aggression is evident across both clinical and subclinical levels of impairment in executive functions. More specifically, the reviewed studies suggest that clinical levels of impairment in executive functions predict marital aggression (Teichner et al., 2001), but even subclinical impairments in executive functions are associated with marital aggression. For example, the association between executive dysfunction and marital aggression is observed regardless of head injury status. Although head injury does predict marital aggression (e.g., Farrer et al., 2012), excluding or controlling for head injury status continues to produce results wherein normative, individual differences in executive functions are associated with marital aggression perpetration (e.g., Westby & Ferraro, 1999; Schafer & Fals-Stewart, 1997; Schafer et al., 1994; Teichner et al., 2001). This is such that even mild impairments in executive functions are associated with marital aggression perpetration and victimization (e.g., Cohen et al., 2003; Stein et al., 2002). Taken
together, relatively mild and subclinical levels of impairment in executive functions can portend greater risk for marital aggression.

Next, all of the available studies investigating executive functions and marital aggression perpetration have been conducted in incarcerated or clinical samples of middle-aged men, with the exceptions of Walling and colleagues’ (2012) community sample of men. Similarly, investigations of victimization are limited to female samples (Stein et al., 2002; Fennema-Notestine et al., 2002; Twamley et al., 2009). Furthermore, these samples tend to be small and subject to selection bias (Pinto et al., 2010). Thus, it is worthwhile to extend these findings to larger, community samples of females and males.

Finally, across studies, marital aggression was often measured with single-informant, self-report measures of aggression. Specifically, the CTS (Straus, 1979) was used in several studies to measure physical aggression perpetration. Dyadic reports of aggression were utilized in only four of the aforementioned studies (i.e., Warnken et al., 1994; Walling et al., 2012; Schafer & Fals-Stewart, 1997; Schafer et al., 1994). Yet, these studies highlight the importance of including dyadic information. For example, in the study conducted by Warnken and colleagues (1994), the association between head injury and psychological aggression would have been disregarded if dyadic reports had not been utilized. Moreover, using dyadic reports of aggression, Schafer and Fals-Stewart (1997) found that males’ impaired executive functions were associated with mutually occurring aggression within married couples. Still further, Schafer et al. (1994) illustrated that impairments in males’ executive functions predict both their own and their partners’ psychological and physical aggression within married couples. Therefore, the interactive effects that occur within dyadic couples, as predicted by the DDS model (e.g.,
Capaldi et al., 2005), may be overlooked without dyadic reports. Finally, it is important to note that the majority of studies focused on physical aggression, leaving psychological and sexual aggression as an area of further investigation.

Together, available research confirms a link between executive dysfunction and marital aggression and alludes to the importance of both self and partner executive dysfunction in outcomes of aggression. Broadly, executive dysfunction is related to several risk factors for aggression (e.g., intelligence, alcohol use, head injury, psychopathology, relationship characteristics) but also directly predicts aggression perpetration and victimization within marital relationships. This holds across population, subtype of aggression, severity of aggression, frequency of aggression, as well as across several indicators and levels of executive dysfunction. Because marital aggression is often preceded by aggression in non-married relationships (O’Leary et al., 1989), the reviewed marital aggression research is relevant to theories of dating aggression. Therefore, based upon the aforementioned empirical literature, executive dysfunction is likely to play an important and underestimated role in dating aggression.

**Executive Dysfunction as a Risk Factor for Dating Aggression**

So, how, then, can executive dysfunction predispose for dating aggression perpetration in adolescents and young adults? First, in regard to etiology of executive dysfunction in adolescence and young adulthood, causes of executive dysfunction are likely to be diverse but meaningful across sources (i.e., clinical or subclinical impairments). Thus, injury, alcohol use, psychopathology, and —most commonly—genetic factors can contribute to varying degrees of executive dysfunction (Paschall & Fishbein, 2002; Friedman et al., 2008). Therefore, because adolescents and young adults are subject to clinical and subclinical impairments in executive
functions, alongside ongoing development of executive functions into young adulthood (e.g., De Luca et al., 2003; Romine & Reynolds, 2005; Diamond, 2002; Center on the Developing Child at Harvard University, 2011), adolescents may display an increased propensity for aggression in comparison to older individuals. Thus, adolescents may be particularly ill-equipped to handle conflict that occurs within romantic relationships, thereby increasing risk for aggression. For this reason, impairments in executive functions may be especially relevant to theories of dating aggression relative to theories of marital aggression.

In addition, several trends observed during adolescence and young adulthood provide evidence that executive dysfunction may be particularly important to consider as a risk factor for dating aggression. First, research suggests that, with the exception of toddlerhood, general aggression peaks in adolescence (e.g., Barker et al., 2007; Blumstein & Cohen, 1987; Karriker-Jaffe, Foshee, Ennett, Suchindran, 2008; Moffitt, 1993). Moreover, aggression directed towards a romantic partner first appears in adolescence. Dating aggression perpetration continues to increase throughout adolescence (Halpern, Oslak, Young, Martin, & Kupper, 2001) and eventually peaks in adolescent or young adulthood (Halpern et al., 2001; O’Leary, 1999; O’Leary & Slep, 2012; see Foshee et al., 2009 for exceptions/discussion). Finally, functional gains in executive functions have been documented to occur between the ages of 15 and 19 years and again between 20 and 29 years of age, likely peaking between the ages of 20-29 years (De Luca et al., 2003). Taken together, then, these trends suggest that the development of executive functions may be one factor that serves to decrease interpersonal aggression across domains. Therefore, executive dysfunction—even as it accompanies young age—is likely to increase risk for aggression perpetrated towards a romantic partner.
Further, the tendency for general, dating, and marital aggression to co-occur suggests a common causal mechanism. As reviewed above, individuals who perpetrate general aggression in adolescence also perpetrate dating aggression (Bossarte et al., 2008; Ozer, Tschann, Pasch, & Flores, 2004; Swahn et al., 2008). Moreover, adolescents and young adults who perpetrate dating aggression often continue to perpetrate aggression towards their marital partners (O’Leary et al., 1989). Therefore, the progression of aggressive behaviors across domain and the lifespan may suggest that executive dysfunction is among the important, shared, causal mechanisms that underlie risk for interpersonal aggression perpetration across domains.

From a phenomenological standpoint, executive dysfunction may be particularly important to study in adolescence and young adulthood. According to Teichner and Golden (2000), behaviors associated with prefrontal impairments tend to first become evident in adolescence. In childhood, executive dysfunction goes unnoticed as self-control is not expected or required of children. However, in adolescence, internalized strategies for self-control and problem-solving are expected. Yet, adolescents with executive dysfunction appear immature and their interpersonal relationships fail to evolve in appropriate ways, thereby increasing risk for aggression (Teichner & Golden, 2000). For the purposes of this study, these executive functioning deficits are conceptualized to culminate into increased risk for dating aggression within dating couples, in that this executive dysfunction may serve as a challenge to both self and to one’s dating partner.

In the only research study of which I am aware that has investigated executive functioning and dating aggression, Finkel and colleagues (2012) investigated the role of instigative (i.e., partner provocation), impelling (i.e., dispositional physical aggressiveness), and
inhibiting (e.g., executive functioning) factors in dating aggression. In this study, both members of 51 heterosexual, undergraduate, dating couples completed measures of dispositional physical aggression, dispositional executive functions (i.e., Stroop Task, Inzlicht & Gutsell, 2007), and a 35-day daily diary study aimed at assessing partner provocation and aggression perpetration (i.e., voodoo doll task; DeWall et al., 2011). Results showed that, on days of high partner provocation, the association between dispositional physical aggressiveness with aggression perpetration (i.e., pin insertion) was stronger for those with greater executive dysfunction. These effects were not significant when partner provocation levels were low, however. Therefore, this study suggests that the association between executive dysfunction and aggression may hold across genders and within couples in late adolescence and young adulthood. However, this study did not assess actual aggression perpetration within couples. Thus, it remains to be investigated if these findings hold to actual acts of dating aggression perpetration.

Taken together, adolescence may be an ideal time to intervene on executive dysfunction because behaviors associated with executive dysfunction become apparent during this time. Moreover, early intervention provides opportunity for rehabilitation, as literature suggests that executive functions can be strengthened through cognitive training (see Paschall & Fishbein, 2002). Additionally, if executive dysfunction of both oneself and one’s romantic partner confers risk for dating aggression, as foreshadowed by the DDS model (Capaldi et al., 2005) and alluded to by preliminary research (Finkel et al., 2012), recognition of dyadic effects can promote intervention and rehabilitation of both romantic partners’ executive functions in an effort to decrease dating aggression. Together, then, executive dysfunction may be an important and
worthwhile construct to investigate as a correlate of dating aggression in adolescent and young adult populations.

**Strengths of the Current Study**

Taken together, executive functions are a worthy candidate for inclusion in dating aggression theory and research. For this reason, it was the aim of this study to investigate the association between executive functions and dating aggression in a dyadic sample of late adolescents and young adults. The anticipated association between executive functions and dating aggression is foreshadowed by the general aggression (e.g., Ogilvie et al., 2011; Barker et al., 2007; Hancock et al., 2010; Miura, 2009; Giancola et al., 1998; Giancola & Zeichner, 1994; Séguin, et al., 1999; Stanford et al., 1997; Bufkin & Luttrell, 2005; Sterzer & Stadler, 2009) and marital aggression (e.g., Cohen et al., 1999; Cohen et al., 2003; Walling et al., 2012; Westby & Ferraro, 1999; Corvo et al., 2006; Teichner et al., 2001; Stanford et al., 2007; Schafer & Fals-Stewart, 1997; Schafer et al., 1994; Stein et al., 2002; Fennema-Notestine et al., 2002) literature. This literature is directly applicable to dating aggression theory due to the co-occurrence of interpersonal aggression across domains and time (e.g., Bossarte et al., 2008; O’Leary et al., 1989). Moreover, because executive functions develop into adulthood (e.g., De Luca et al., 2003; Romine & Reynolds, 2005; Diamond, 2002; Center on the Developing Child at Harvard University, 2011), impairments in executive functions may be a particularly important risk factor among adolescent and young adult populations. Indeed, a single research study that has investigated executive dysfunction in a sample of young adult dating couples found evidence for an association between executive dysfunction and an analog of measure of dating aggression. For
this reason, the current study focused on further investigating the association among executive
dysfunction and dating aggression in late adolescence and young adulthood.

Based on the reviewed literature, several considerations for this investigation were
merited. In particular, the current study aimed to clarify several aspects of the predicted
association between executive dysfunction and dating aggression in a dyadic sample of dating
couples. Rationale is provided for the investigation of the association between executive
dysfunction and dating aggression in a normative sample, with particular focus on frequency of
aggression perpetration, partner characteristics, dyadic measurement, gender, and subtypes of
aggression in what follows.

**Normative Sample.** First, it is certainly a worthwhile endeavor to investigate executive
dysfunction in a normative population, given that executive dysfunction is most commonly
attributed to genetic, individual differences (Friedman et al., 2008). These subclinical
impairments in executive functions have been demonstrated to be associated with general
aggression and marital aggression perpetration (e.g., Hawkins & Trobst, 2000; Stanford et al.,
1997; Giancola & Zeichner, 1994; Schafer & Fals-Stewart, 1997; Séguin et al., 1995; Westby
and Ferraro, 1999; Paschall & Fishbein, 2002), and the reviewed literature suggests that head
injury, alcohol use, and psychopathology cannot fully account for the association between
executive functions and aggression (e.g., Westby & Ferraro, 1999; Schafer & Fals-Stewart,
1997; Schafer et al., 1994; Teichner et al., 2001; Stein et al., 2002; Cohen et al., 1999; Cohen et
al., 2003). For this reason, the current study utilized a large, normative, college sample of
females and males. This late adolescent and young adult population provides the opportunity to
investigate age-normative, individual differences in executive functions that are
characteristic of this younger population as compared to their older counterparts sampled in the extant marital literature. Moreover, the use of a college sample is appropriate because the association between executive dysfunction and dating aggression has been previously demonstrated in college samples (e.g., Finkel et al., 2012). Additionally, both females and males were included in this study, which is important given the limited information available regarding the association among females’ executive dysfunction and aggression perpetration.

Frequency. Secondly, the current study investigated the impact of executive dysfunction on the frequency of dating aggression perpetration. While the majority of individuals who engage in dating aggression tend to do so relatively infrequently (Follingstad et al., 1999; Klipfel & van Dulmen, 2012), it is likely that executive dysfunction may lead to more frequent acts of dating aggression. For example, Follingstad and colleagues (1999) investigated physical dating aggression in a college sample, wherein they used frequency ratings—rather than dichotomized variables—of physical aggression to investigate risk factors for dating aggression perpetration. Participants perpetrating a higher frequency of dating aggression were distinguished from less frequent perpetrators of dating aggression by less self-reported inhibition in expressing anger and greater need for control over a romantic partner during conflict. Given that inhibition is related to executive functioning, these results may have implications for understanding the role of executive dysfunction in the frequency of dating aggression perpetration. Furthermore, this literature—taken alongside literature indicating that executive dysfunction is associated with greater frequency and severity of generally aggressive offenses (e.g., assault, rape, homicide; Hancock et al., 2010) and more frequent marital aggression perpetration (Corvo et al., 2006; Walling et al., 2012)—underscores the potential role that executive dysfunction plays in frequent
acts of dating aggression. It is also important to note that individuals with executive dysfunction may not appropriately monitor and revise unproductive strategies and behaviors (Paschall & Fishbein, 2002; see Ridderinkhof, van den Wildenberg, Segalowitz, & Carter, 2004 for review), thereby augmenting the risk for continued and more frequent dating aggression perpetration.

Further, in the only study directly investigating executive dysfunction and dating aggression, Finkel et al. (2012) used an analog of dating aggression perpetration (i.e., number of pins place in a voodoo doll task), which serves as an analog measure of aggression. The current study provided the advantage of assessing frequency of self-reported aggressive acts within the past year with each participant’s current dating partner. Together, then, it was expected that impairments in executive functions would be associated with more frequent perpetration of psychological, physical, and sexual dating aggression.

**Partner Characteristics.** As guided by the DDS model (Capaldi et al., 2005), the current study proposes that both one’s own and one’s dating partner’s executive dysfunction predicts dating aggression perpetration. This is such that individuals are likely to not only select dating partners with similar impairments in executive functions and aggressive tendencies, but that these executive functioning characteristics will also increase the likelihood of both one’s own and one’s partner’s use of dating aggression. More specifically, behavioral manifestations of cognitive difficulties in ability to shift attention, update strategies, and inhibit responses may serve as a frustration to a romantic partner, in turn increasing the likelihood of aggressive acts of both self and partner. Conversely, well-developed executive functioning may serve to decrease one’s own use of dating aggression as well as one’s partner’s use of aggressive tactics.
As foreshadowed by the DDS model (e.g., Capaldi et al., 2005), available research provides preliminary evidence for the proposed interactive effects between romantic partners. For example, research conducted in married samples has demonstrated positive assortment for executive functions (Jester, Nigg, Puttler, Long, Fitzgerald, & Zucker, 2009). Moreover, research on the related constructs of self-control, self-regulation, and impulsivity has implicated both self and partner characteristics as they relate to indicators of dating relationship quality. For example, self-regulation failure has been demonstrated to be associated with perpetration of dating aggression within dating dyads (Finkel, DeWall, Slotter, Oaten, & Foshee, 2009).

Similarly, in a study conducted by Vohs, Finkenauer, and Baumeister (2011), high levels of self-control within dating couples (i.e., high levels of self-control in both members of a dyad) were associated with positive relationship qualities, including, but not limited to, increased relationship satisfaction and reduced conflict. Still further, preliminary research has implicated partner’s low levels of self-control in increased risk for dating aggression (van Dulmen, Klipfel, Bruss, & Listwan, 2012). Therefore, if these behaviors are extrapolated to be indicators of underlying executive functions (see Beaver, Wright, & Delisi, 2007 for relation of self-control to executive functioning), it is likely that both one’s own and one’s romantic partner’s executive functions have implications for outcomes of dating aggression.

Unfortunately, the reviewed marital and dating aggression literature largely neglected the role of partner characteristics, with the exception of one’s romantic partner’s aggressive tendencies (Schafer & Fals-Stewart, 1997; Schafer et al., 1994; Warnken et al., 1994). However, the studies that did include dyadic information provide preliminary support for the DDS theory (e.g., Capaldi et al., 2005). More specifically, within dating couples, executive dysfunction was
associated with increased aggression perpetration for females and males, particularly for individuals of high dispositional aggressiveness and when highly provoked by a partner (Finkel et al., 2012). Note, however, that interactive effects of executive dysfunction, in particular, were not explored in this study (i.e., executive dysfunction as associated with a partner’s outcomes of aggression). Yet, the study may allude to the possibility that partner characteristics impact both female and male outcomes of aggression. Further, findings from the reviewed marital aggression literature that utilized dyadic designs suggested that males’ executive dysfunction predicted mutually occurring marital aggression (Schafer & Fals-Stewart, 1997), as well as males’ partners’ use of aggression (Schafer et al., 1994). Moreover, research on victimized females has suggested that victims of marital aggression evidence executive dysfunction (e.g., Stein et al., 2002; Twamley et al., 2009; Fennema-Notestine et al., 2002) that may not be fully accounted for by psychopathology alone (e.g., Stein et al., 2002). This is intuitive in light of literature suggesting that many of the risk factors are similar for victims and perpetrators of aggression (e.g. O’Keefe Treister, 1998; Gray & Foshee, 1997; Gray & Foshee, 1997; Straus & Ramirez, 2007), alongside literature suggesting aggression tends to be reciprocal in nature (e.g., Gray & Foshee, 1997; Whitaker et al., 2007; Straus & Ramirez, 2007; Capaldi & Crosby, 1997). Therefore, executive dysfunction of both self and partner may predict dating aggression perpetration, suggesting the importance of incorporating both self and partner characteristics (i.e., executive dysfunction) in understanding risk for dating aggression in couples.

Measurement. Relatedly, based on the reviewed literature, it is likely that measurement can be improved upon. First, in regard to the measurement of aggression, the only study that has investigated executive dysfunction and dating aggression relied on an analog measure of
aggression perpetration, rather than reports of committed acts of aggression (Finkel et al., 2012). While the voodoo doll task is a useful analog, it does not clearly equate to actual acts of aggression. In addition, few studies gathered information from both partners related to aggression (i.e., Schafer et al., 1994; Schafer & Fals-Stewart, 1997; Warnken et al., 1994; Finkel et al., 2012; Walling et al., 2012). This is problematic for the theoretical reasons described above because the hypothesized interactive effects that occur within dyadic couples are neglected (i.e., DDS theory; Capaldi et al., 2005). For this reason, it remains to be investigated whether one’s partner’s characteristics of executive functioning predict dating aggression perpetration for both females and males. Therefore, information on both partners’ acts of dating aggression provide theoretical advantages.

In regard to measurement of executive functions, information on both partners’ executive dysfunction was largely not investigated (see Finkel et al., 2012 for exception), again limiting the investigation of interactive effects within couples. In addition, it is notable that measurement tends to be widely discrepant across the general and marital aggression literature. The Trail Making Test, Form B (Lezak, 1995) and perseverative errors of the WCST (Heaton, 1981) were among the most consistently supported indicators of executive dysfunction across marital aggression literature. Yet, Miyake and colleagues (2000) have provided specific and empirically derived recommendations for the measurement of executive functions and the subcomponent abilities of shifting, updating, and inhibition. Specifically, shifting abilities may be measured using the Plus-Minus (Jersild, 1927; Spector & Biderman, 1976), Number-Letter (Rogers & Monsell, 1995), or the Local-Global (Navon, 1977) tasks. To measure updating abilities, the Letter Memory (Morris & Jones, 1990), Keep Track (Yntema, 1963), or Tone Monitoring
(Larson, Merritt, & Williams, 1988) tasks are recommended. Finally, to measure inhibition, Miyake and colleagues (2000) propose the Antisaccade (Hallett, 1978), Stop-Signal (Logan, 1994), or Stroop (Stroop, 1935) tasks. While none of the marital aggression or dating aggression literature utilized Miyake and colleagues (2000) specific recommendations for the measurement of executive functions, several studies utilized the Stroop Task which was proposed by Miyake and colleagues to measure inhibition difficulties (i.e., Cohen et al., 2003; Westby & Ferraro, 1999; Teichner et al., 2001; Schafer & Fals-Stewart, 1997; Schafer et al., 1994; Stein et al., 2002, Finkel et al., 2002). In addition, across studies, measures were used that do map onto indicators of shifting (e.g., perseverative errors of the WCST, Trail Making Test), updating (e.g., Digit Symbol), and inhibition (e.g., Stroop) subdomains of executive functions. Therefore, the current study aimed to first extend the investigation of executive dysfunction and dating aggression to clinically-normed indicators used in prior marital aggression literature (i.e., WCST). Again, note that literature suggests that perseverative errors of the WCST closely align with Miyake’s conceptualization of shifting difficulties (Miyake et al., 2000). In addition, though, this study also aimed to utilize Miyake’s widely accepted, empirically-derived definition and measurement modality for executive functions across indicators of shifting, updating, and inhibition. Furthermore, this data was collected on both members of the dating couple, allowing for the examination of assortative mating and the interactive impact that executive dysfunction may have on self and partner outcomes of dating aggression.

**Gender.** Next, it remains to be investigated whether gender moderates the association between impaired executive functions and dating aggression. This is an important consideration because females are largely neglected in the aforementioned general and marital aggression
perpetration literature. While preliminary research in the dating aggression literature suggests that executive dysfunction predicts dating aggression for females and males (Finkel et al. 2012), gender differences in this association have not been explored. There may be reason to expect gender differences in the association among executive dysfunction and dating aggression. For example, authors such as Nigg and Pollock-Huang (2003) have proposed that executive functions may play a greater role in female delinquency and aggression, though research tends to be mixed and inconclusive. In terms of dating aggression specifically, risk factors for dating aggression are largely similar between females and males (Magdol et al., 1998; for exceptions see Foshee, Bauman, & Linder, 1999; Foshee, Linder, MacDougall, & Bangdiwala, 2001; O’Keefe & Treister, 1998; Kinsfogel & Grych, 2004). Yet, problem-solving abilities, which are one of several behavioral manifestations of executive functioning abilities (Zelazo, Carter, Reznick, & Douglas, 1997), may predict dating aggression differentially for females and males. Some studies have suggested that problem-solving skills are negatively associated with both female and male dating aggression (e.g., Hammock & O’Hearn, 2002). Other studies have confirmed that problem-solving abilities are negatively associated with both female and male dating aggression perpetration, with the caveat that problem-solving abilities only discriminate aggressive males from non-aggressive males (e.g., Riggs, O’Leary, & Breslin, 1990). Still other studies have found that problem-solving skills are associated with only female dating aggression perpetration (e.g., Luthra, & Gidycz, 2006). Therefore, this study investigated whether gender impacts the association among executive functions and dating aggression.

**Subtypes of Aggression.** Finally, this study aimed to investigate whether executive dysfunction differentially predicts psychological, physical, and sexual aggression. The majority
of the aggression literature has investigated and confirmed executive dysfunction as it predicts physical aggression. However, the aforementioned marital aggression studies do not preclude men who perpetrated psychological and sexual aggression against their marital partners. Similarly, the voodoo doll task used by Finkel et al. (2012) is not specific to any subtype of aggression though tends to be associated with psychological and physical aggression. With regard to psychological aggression specifically, extant literature has demonstrated somewhat mixed findings regarding the association between executive dysfunction and psychological aggression (e.g., Schafer et al., 1994; Walling et al., 2012; Stein et al., 2002). In terms of sexual aggression, executive dysfunction has been demonstrated in those convicted of rape and in victims of sexual aggression across general and marital aggression literature (Hancock, Tapscott, & Hoaken, 2010; Stein et al., 2002; Fennema-Notestine et al., 2002). Relatedly, executive dysfunction is evident in populations of adolescent sex offenders (Kelly, Richardson, Hunter, & Knapp, 2002; Veneziano, Veneziano, LeGrand, & Richards, 2004). Thus, some evidence exists to suggest that executive dysfunction is likely to be a common risk factor to psychological, physical, and sexual dating aggression, particularly because these subtypes of aggression occur together (Sears et al., 2007). However, this assumption remains to be investigated.

In conclusion, the current study proposed that both one’s own and one’s dating partner’s executive dysfunction predicts dating aggression perpetration. This association was investigated using both clinically normed measures of executive functions used in the marital literature (i.e., WCST), as well as empirically-derived measures of executive functions that are based on Miyake’s definition of executive functions. Based on the reviewed literature, this association was expected to be robust when correlates of executive dysfunction and dating aggression (e.g., age,
ethnicity, cohabitation status, relationship length, relationship satisfaction, head insult/injury, alcohol use, ADHD symptoms, and premorbid IQ) are considered and in a dyadic, college sample of females and males with subclinical levels of impairments in executive functioning. Because the current study is the first to investigate the association among executive dysfunction and psychological, physical, and sexual dating aggression, this study is an important first step in understanding executive dysfunction as a risk for dating aggression among and within dating couples.
AIMS & HYPOTHESES

Aim 1

Aim 1 broadly investigated the association between one’s own executive dysfunction and the frequency of one’s own use of dating aggression, with attention to the role of gender on this association.

Aim 1a. Aim 1a sought to investigate the association between one’s own executive dysfunction and the frequency of one’s own use of dating aggression within dating couples.

Based on the aforementioned literature (Marsh and Martinovich, 2006; Walling et al., 2012; Cohen et al., 1999; Cohen et al., 2003; Westby & Ferraro, 1999; Corvo et al., 2006; Teichner et al., 2001; Stanford et al., 2007; Schafer & Fals-Stewart, 1997; Schafer et al., 1994), it was expected that greater executive functioning abilities are protective and thus be associated with the less frequent dating aggression perpetration. Conversely, it was predicted that poorer performance on tasks of executive functioning are associated with greater frequency of dating aggression perpetration. This association was expected to be robust taking covariates (e.g., age, ethnicity, cohabitation status, relationship length, relationship satisfaction, head insult/injury, alcohol use, ADHD symptoms, and premorbid IQ) into account. Moreover, this association was expected to be found across indicator of executive dysfunction (i.e., WCST, shifting, updating, and inhibition) and subtypes of dating aggression (i.e., psychological, physical, and sexual aggression).
**Hypothesis I.** A positive association was expected between one’s own executive dysfunction and one’s own psychological dating aggression perpetration for females and males.

**Hypothesis Ia.** A positive association was expected between one’s own executive dysfunction and one’s own psychological dating aggression perpetration for males and females as measured by a clinically normed measure of executive functions (i.e., WCST).

**Hypothesis Ib.** A positive association between one’s own executive dysfunction and one’s own psychological dating aggression perpetration was expected for males and females among the shifting subcomponent of executive functions (i.e., Plus-Minus task).

**Hypothesis Ic.** A positive association was expected between one’s own executive dysfunction and one’s own psychological dating aggression perpetration for males and females among the updating subcomponent of executive functions (i.e., Letter Memory task).

**Hypothesis Id.** A positive association between one’s own executive dysfunction and one’s own psychological dating aggression perpetration was expected for males and females among the inhibition subcomponent of executive functions (i.e., Go/No-Go task).

**Hypothesis II.** A positive association between one’s own executive functioning impairments and one’s own use of physical dating aggression was expected for females and males.

**Hypothesis IIa.** A positive association between one’s own executive dysfunction and one’s own physical dating aggression perpetration was anticipated for males and females as measured by a clinically normed measure of executive functions (i.e., WCST).
Hypothesis IIb. A positive association between one’s own executive dysfunction and one’s own physical dating aggression perpetration was expected for males and females among the shifting subcomponent of executive functions (i.e., Plus-Minus task).

Hypothesis IIc. A positive association was anticipated between one’s own executive dysfunction and one’s own physical dating aggression perpetration for males and females among the updating subcomponent of executive functions (i.e., Letter Memory task).

Hypothesis IId. A positive association between one’s own executive dysfunction and one’s own physical dating aggression perpetration was anticipated for males and females among the inhibition subcomponent of executive functions (i.e., Go/No-Go task).

Hypothesis III. I predicted a positive association between one’s own executive dysfunction and one’s own use of sexual dating aggression.

Hypothesis IIIa. A positive association between one’s own executive dysfunction and one’s own sexual dating aggression perpetration was expected for males and females as measured by a clinically normed measure of executive functions (i.e., WCST).

Hypothesis IIIb. A positive association between one’s own executive dysfunction and one’s own sexual dating aggression perpetration was predicted for males and females among the shifting subcomponent of executive functions (i.e., Plus-Minus task).

Hypothesis IIIc. A positive association between one’s own executive dysfunction and one’s own sexual dating aggression perpetration for males and females was predicted among the updating subcomponent of executive functions (i.e., Letter Memory task).

Hypothesis IIIId. A positive association was expected between one’s own executive dysfunction and one’s own sexual dating aggression perpetration for males and females among the inhibition subcomponent of executive functions (i.e., Go/No-Go task).
**Aim 1b.** Aim 1b sought to investigate whether the association between one’s own executive dysfunction and one’s own dating aggression was stronger for females or males.

Given that gender has not been explored as it impacts the association between executive functions and dating/marital aggression (Marsh and Martinovich, 2006; Walling et al., 2012; Cohen et al., 1999; Cohen et al., 2003; Westby & Ferraro, 1999; Corvo et al., 2006; Teichner et al., 2001; Stanford et al., 2007; Schafer and Fals-Stewart, 1997; Schafer et al., 1994), it was the aim of this study to explore whether gender differences exist in this association. However, no specific hypotheses were made.

**Hypothesis IV.** The relationship between executive dysfunction and psychological aggression was expected to differ for females versus males.

**Hypothesis IVa.** The expected positive association between one’s own executive dysfunction and one’s own psychological dating aggression perpetration was predicted to differ among males and females as measured by a clinically normed measure of executive functions (i.e., WCST).

**Hypothesis IVb.** The expected positive association between one’s own executive dysfunction and one’s own psychological dating aggression perpetration was predicted to differ among males and females on the shifting subcomponent of executive functions (i.e., Plus-Minus task).

**Hypothesis IVc.** The predicted positive association between one’s own executive dysfunction and one’s own psychological dating aggression perpetration was expected to differ among males and females on the updating subcomponent of executive functions (i.e., Letter Memory task).
Hypothesis IVd. The expected positive association between one’s own executive
dysfunction and one’s own psychological dating aggression perpetration was predicted to differ
among males and females on the inhibition subcomponent of executive functions (i.e., Go/No-Go task).

Hypothesis V. The relationship between executive dysfunction and physical aggression
was expected to differ for females as compared to males.

Hypothesis Va. The expected positive association between one’s own executive
dysfunction and one’s own physical dating aggression perpetration was expected to differ among
males and females as measured by a clinically normed measure of executive functions (i.e.,
WCST).

Hypothesis Vb. The predicted positive association between one’s own executive
dysfunction and one’s own physical dating aggression perpetration was expected to differ among
males and females on the shifting subcomponent of executive functions (i.e., Plus-Minus task).

Hypothesis Vc. The expected positive association between one’s own executive
dysfunction and one’s own physical dating aggression perpetration was predicted to differ among
males and females on the updating subcomponent of executive functions (i.e., Letter Memory
task).

Hypothesis Vd. The expected positive association between one’s own executive
dysfunction and one’s own physical dating aggression perpetration was expected to differ among
males and females on the inhibition subcomponent of executive functions (i.e., Go/No-Go task).

Hypothesis VI. The relationship between executive dysfunction and sexual aggression
was predicted to differ for females as compared to males.
Hypothesis VIa. The expected positive association between one’s own executive dysfunction and one’s own sexual dating aggression perpetration was expected to differ among males and females as measured by a clinically normed measure of executive functions (i.e., WCST).

Hypothesis VIb. The expected positive association between one’s own executive dysfunction and one’s own sexual dating aggression perpetration was predicted to differ among males and females on the shifting subcomponent of executive functions (i.e., Plus-Minus task).

Hypothesis VIc. The expected positive association between one’s own executive dysfunction and one’s own sexual dating aggression perpetration was expected to differ among males and females on the updating subcomponent of executive functions (i.e., Letter Memory task).

Hypothesis VId. The expected positive association between one’s own executive dysfunction and one’s own sexual dating aggression perpetration was anticipated to differ among males and females on the inhibition subcomponent of executive functions (i.e., Go/No-Go task).

Aim 2

Broadly, Aim 2 investigated the association between one’s own executive dysfunction and the frequency of one’s dating partner’s use of dating aggression, with attention to the role of gender on this association.

Aim 2a. Aim 2a investigated the association between one’s own executive dysfunction and one’s partner’s dating aggression perpetration within dating couples.

Extant literature on executive functioning and marital aggression alludes to the possibility that partner characteristics may predict aggression (Schafer & Fals-Stewart, 1997; Schafer et al.,
1994; Warnken et al., 1994; Stein et al., 2002; Fennema-Notestine et al., 2002). More specifically, based on the DDS model (Capaldi et al., 2005), it was expected that well-developed executive functions exhibited by one’s romantic partner may result in less frequent dating aggression perpetration. Similarly, impaired executive functions displayed by a romantic partner was expected to increase the frequency of dating aggression perpetrated against that romantic partner.

**Hypothesis VII.** One’s own executive dysfunction was predicted to be positively associated with one’s partner’s use of psychological dating aggression for females and males.

**Hypothesis VIIa.** A positive association between one’s own executive dysfunction and one’s partner’s psychological dating aggression perpetration was expected for males and females as measured by a clinically normed measure of executive functions (i.e., WCST).

**Hypothesis VIIb.** A positive association was expected between one’s own executive dysfunction and one’s partner’s psychological dating aggression perpetration for males and females among the shifting subcomponent of executive functions (i.e., Plus-Minus task).

**Hypothesis VIIc.** A positive association was predicted between one’s own executive dysfunction and one’s partner’s psychological dating aggression perpetration for males and females among the updating subcomponent of executive functions (i.e., Letter Memory task).

**Hypothesis VIIId.** A positive association between one’s own executive dysfunction and one’s partner’s psychological dating aggression perpetration was predicted for males and females among the inhibition subcomponent of executive functions (i.e., Go/No-Go task).

**Hypothesis VIII.** One’s own executive dysfunction was expected to be positively associated with one’s partner’s use of physical dating aggression perpetration.
Hypothesis VIIIa. A positive association between one’s own executive dysfunction and one’s partner’s physical dating aggression perpetration was predicted for males and females as measured by a clinically normed measure of executive functions (i.e., WCST).

Hypothesis VIIIb. A positive association was expected between one’s own executive dysfunction and one’s partner’s physical dating aggression perpetration for males and females among the shifting subcomponent of executive functions (i.e., Plus-Minus task).

Hypothesis VIIIc. A positive association was predicted between one’s own executive dysfunction and one’s partner’s physical dating aggression perpetration for males and females among the updating subcomponent of executive functions (i.e., Letter Memory task).

Hypothesis VIIIId. A positive association was expected between one’s own executive dysfunction and one’s partner’s physical dating aggression perpetration for males and females among the inhibition subcomponent of executive functions (i.e., Go/No-Go task).

Hypothesis IX. I expected a positive association between one’s own executive dysfunction and one’s partner’s sexual dating aggression perpetration.

Hypothesis IXa. A positive association was expected between one’s own executive dysfunction and one’s partner’s sexual dating aggression perpetration for males and females as measured by a clinically normed measure of executive functions (i.e., WCST).

Hypothesis IXb. A positive association was anticipated between one’s own executive dysfunction and one’s partner’s sexual dating aggression perpetration for males and females among the shifting subcomponent of executive functions (i.e., Plus-Minus task).
Hypothesis IXc. A positive association was predicted between one’s own executive dysfunction and one’s partner’s sexual dating aggression perpetration for males and females among the updating subcomponent of executive functions (i.e., Letter Memory task).

Hypothesis IXd. A positive association was predicted between one’s own executive dysfunction and one’s partner’s sexual dating aggression perpetration for males and females among the inhibition subcomponent of executive functions (i.e., Go/No-Go task).

Aim 2b. Aim 2b investigated whether the association between one’s own executive dysfunction and one’s partner’s dating aggression perpetration is stronger for females or males.

Again, given the lack of literature investigating gender differences in the association among executive functions and dating/marital aggression, particularly in regard to partner effects, Aim 2b was exploratory in nature.

Hypothesis X. No a priori assumptions were made as to whether females’ or males’ executive dysfunction would be more strongly related to their partners’ outcomes of psychological aggression.

Hypothesis Xa. The expected positive association between one’s own executive dysfunction and one’s partner’s psychological dating aggression perpetration was predicted to differ among males and females as measured by a clinically normed measure of executive functions (i.e., WCST).

Hypothesis Xb. The expected positive association between one’s own executive dysfunction and one’s partner’s psychological dating aggression perpetration was predicted to differ among males and females on the shifting subcomponent of executive functions (i.e., Plus-Minus task).
Hypothesis Xc. The expected positive association between one’s own executive
dysfunction and one’s partner’s psychological dating aggression perpetration was expected to
differ among males and females on the updating subcomponent of executive functions (i.e.,
Letter Memory task).

Hypothesis Xd. The expected positive association between one’s own executive
dysfunction and one’s partner’s psychological dating aggression perpetration was expected to
differ among males and females on the inhibition subcomponent of executive functions (i.e.,
Go/No-Go task).

Hypothesis XI. The investigation of whether females’ or males’ executive functioning
difficulties would be more strongly related to their partners’ outcomes of physical aggression
was exploratory in nature.

Hypothesis XIa. The expected positive association between one’s own executive
dysfunction and one’s partner’s physical dating aggression perpetration was predicted to differ
among males and females as measured by a clinically normed measure of executive functions
(i.e., WCST).

Hypothesis XIb. The expected positive association between one’s own executive
dysfunction and one’s partner’s physical dating aggression perpetration was expected to differ
among males and females on the shifting subcomponent of executive functions (i.e., Plus-Minus
task).

Hypothesis XIc. The expected positive association between one’s own executive
dysfunction and one’s partner’s physical dating aggression perpetration was predicted to differ
among males and females on the updating subcomponent of executive functions (i.e., Letter Memory task).

*Hypothesis XId.* The expected positive association between one’s own executive dysfunction and one’s partner’s physical dating aggression perpetration was anticipated to differ among males and females on the inhibition subcomponent of executive functions (i.e., Go/No-Go task).

*Hypothesis XII.* I explored whether females’ or males’ executive dysfunction was more strongly related to their partners’ outcomes of sexual aggression.

*Hypothesis XIIa.* The expected positive association between one’s own executive dysfunction and one’s partner’s sexual dating aggression perpetration was expected to differ among males and females as measured by a clinically normed measure of executive functions (i.e., WCST).

*Hypothesis XIIb.* The expected positive association between one’s own executive dysfunction and one’s partner’s sexual dating aggression perpetration was predicted to differ among males and females on the shifting subcomponent of executive functions (i.e., Plus-Minus task).

*Hypothesis XIIc.* The expected positive association between one’s own executive dysfunction and one’s partner’s sexual dating aggression perpetration was expected to differ among males and females on the updating subcomponent of executive functions (i.e., Letter Memory task).

*Hypothesis XIIId.* The expected positive association between one’s own executive dysfunction and one’s partner’s sexual dating aggression perpetration was predicted to differ
among males and females on the inhibition subcomponent of executive functions (i.e., Go/No-Go task).

**Aim 3**

Aim 3 sought to clarify the relative contribution of executive dysfunction to subtypes of dating aggression among females and males.

**Aim 3a.** Aim 3a investigated whether the expected positive associations among females’ executive functioning impairments and outcomes of dating aggression perpetration were stronger among any of the subtypes of aggression (i.e., psychological, physical, or sexual dating aggression).

In light of the reviewed literature (Marsh and Martinovich, 2006; Walling et al., 2012; Cohen et al., 1999; Cohen et al., 2003; Westby & Ferraro, 1999; Corvo et al., 2006; Teichner et al., 2001; Stanford et al., 2007; Schafer and Fals-Stewart, 1997; Schafer et al., 1994], there was reason to expect that executive dysfunction contributes to psychological, physical, and sexual dating aggression. However, given that the literature was somewhat mixed regarding the role of executive dysfunction with psychological aggression (Warnken et al., 1994; Walling et al., 2012), there was reason to suspect that executive functions may contribute differentially to subtypes of aggression. However, no specific hypotheses were made due to the tendency for subtypes of aggression to occur together (Sears et al., 2007).

**Hypothesis XIII.** I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for physical aggression or psychological aggression among females.
Hypothesis XIIIa. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for physical aggression or psychological aggression among females as measured by a clinically normed measure of executive functions (i.e., WCST).

Hypothesis XIIIb. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for physical aggression or psychological aggression among females on the shifting subcomponent of executive functions (i.e., Plus-Minus task).

Hypothesis XIIIc. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for physical aggression or psychological aggression among females on the updating subcomponent of executive functions (i.e., Letter Memory task).

Hypothesis XIIIId. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for physical aggression or psychological aggression among females on the inhibition subcomponent of executive functions (i.e., Go/No-Go task).

Hypothesis XIV. The magnitude of the association between executive dysfunction and dating aggression was compared between sexual aggression and physical aggression, without an a priori assumption of results for females.

Hypothesis XIVa. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or physical
aggression among females as measured by a clinically normed measure of executive functions (i.e., WCST).

*Hypothesis XIVb.* I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or physical aggression among females on the shifting subcomponent of executive functions (i.e., Plus-Minus task).

*Hypothesis XIVc.* I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or physical aggression among females on the updating subcomponent of executive functions (i.e., Letter Memory task).

*Hypothesis XIVd.* I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or physical aggression among females on the inhibition subcomponent of executive functions (i.e., Go/No-Go task).

*Hypothesis XV.* I explored whether executive dysfunction demonstrated a larger association with sexual aggression as compared to psychological aggression among females.

*Hypothesis XVa.* I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or psychological aggression among females as measured by a clinically normed measure of executive functions (i.e., WCST).

*Hypothesis XVb.* I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or psychological
aggression among females on the shifting subcomponent of executive functions (i.e., Plus-Minus task).

Hypothesis XVc. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or psychological aggression among females on the updating subcomponent of executive functions (i.e., Letter Memory task).

Hypothesis XVd. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or psychological aggression among females on the inhibition subcomponent of executive functions (i.e., Go/No-Go task).

Aim 3b. Aim 3b investigated whether the expected positive associations among males’ executive dysfunction and outcomes of dating aggression perpetration were stronger among any of the subtypes of dating aggression (i.e., psychological, physical, or sexual subtypes of dating aggression).

The aforementioned aim (i.e., Aim 3a) was replicated in males based on the abovementioned reasoning.

Hypothesis XVI. I explored whether the association among executive dysfunction and dating aggression was stronger for physical aggression as compared to psychological aggression.

Hypothesis XVIa. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for physical aggression or psychological aggression among males as measured by a clinically normed measure of executive functions (i.e., WCST).
Hypothesis XVIb. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for physical aggression or psychological aggression among males on the shifting subcomponent of executive functions (i.e., Plus-Minus task).

Hypothesis XVIc. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for physical aggression or psychological aggression among males on the updating subcomponent of executive functions (i.e., Letter Memory task).

Hypothesis XVId. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for physical aggression or psychological aggression among males on the inhibition subcomponent of executive functions (i.e., Go/No-Go task).

Hypothesis XVII. The magnitude of association between males’ executive dysfunction and dating aggression was compared between sexual aggression and physical aggression.

Hypothesis XVIIa. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or physical aggression among males as measured by a clinically normed measure of executive functions (i.e., WCST).

Hypothesis XVIIb. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or physical aggression among males on the shifting subcomponent of executive functions (i.e., Plus-Minus task).
Hypothesis XVIIc. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or physical aggression among males on the updating subcomponent of executive functions (i.e., Letter Memory task).

Hypothesis XVIIId. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or physical aggression among males on the inhibition subcomponent of executive functions (i.e., Go/No-Go task).

Hypothesis XVIII. Without a priori assumptions, the magnitude of the association between males’ executive dysfunction and dating aggression was compared between sexual aggression and psychological aggression.

Hypothesis XVIIIa. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or psychological aggression among males as measured by a clinically normed measure of executive functions (i.e., WCST).

Hypothesis XVIIIb. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or psychological aggression among males on the shifting subcomponent of executive functions (i.e., Plus-Minus task).

Hypothesis XVIIIc. I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or psychological
aggression among males on the updating subcomponent of executive functions (i.e., Letter Memory task).

_Hypothesis XVIII d._ I explored whether the association between executive dysfunction and outcomes of dating aggression was larger in magnitude for sexual aggression or psychological aggression among males on the inhibition subcomponent of executive functions (i.e., Go/No-Go task).
METHOD

Participants

The current study utilized data collected from 2012 to 2013 at Kent State University as part of the Cognitive Functioning within Late Adolescents’ Romantic Relationships study. Participants included 138 individuals recruited through the Psychology Subject Pool and their romantic partners (N=276); one member of each dyad was recruited through the subject pool and recruited his/her romantic partner to participate in an in-lab assessment. To be eligible for study participation, both members of the couple were required to be native English speakers and between the ages of 18 and 29 years of age. In addition, couples were required to identify as having been in a mutually-defined, heterosexual dating relationship for at least one month and could not be married. Restriction criteria reflected concerns regarding the verbal nature of cognitive assessments and observational tasks, developmental considerations, and research indicating some differences in aggression in homosexual couples as compared to heterosexual couples (Freedner, Freed, Yang, & Austin, 2002; Halpern, Young, Waller, Martin, & Kupper, 2004). The final sample includes 138 heterosexual dating couples (n = 276 individuals). None of these couples were married at the time of study, though as many as 2 couples (1% of the sample) were engaged at the time of study. One female reported that she was widowed. Further, at the time of study, 2 females and 2 males reported they had children.
Procedure

Dating couples completed an in-lab assessment conducted by trained undergraduate research assistants under the supervision of advanced graduate students, faculty psychologists, and a licensed clinical psychologist. As a part of this assessment, each member of the couple completed paper-and-pencil questionnaires, paper-and-pencil measures of cognitive functioning, and computerized tasks of cognitive functioning. In addition, each couple completed a videotaped conflict resolution task. The current investigation utilized information obtained from individual paper-and-pencil questionnaires, paper-and-pencil cognitive measures, and computerized cognitive measures. The assessment was approximately four hours in duration; participants provided consent prior to study participation (see Appendix A) and were compensated for their time with research participation points used for class credits or with $35. All procedures were approved in advance by Kent State University’s Institutional Review Board (approval number: 11-344).

Measures

Control variables. Several control variables were considered for inclusion as covariates as guided by the reviewed empirical works. Final decision to include covariates depended on results of formal statistical analysis; only those control variables significantly \( p < .05 \) associated with both predictor executive functioning indicators, as well as outcomes of psychological, physical, and sexual dating aggression were included as covariates as indicated across models.

Age. The prevalence of dating aggression increases with age in adolescence/young adulthood and declines across adulthood (e.g., Halpern et al., 2001; O’Leary & Woodin, 2005).
For this reason, age was considered as a covariate in the current study. A study specific, self-report questionnaire was created to assess sociodemographic information for the current sample. The Sociodemographic Questionnaire (SDQ) is a 19-item, self-report questionnaire that each individual in the couple completed. Age was calculated based on each participant’s birthdate and the date of assessment. Females ranged from 18-25 years-of-age, with an average age of 19.86 (SD = 1.43). Males ranged from 18-29 years-of-age, with a mean age of 20.62 years-of-age (SD = 2.15). Males were significantly older than females in the current sample, \( t(137) = 5.15, p < .001, d = .42 \).

**Ethnicity.** Although findings are often inconsistent among studies, there is some evidence to suggest that dating aggression may occur more frequently among some ethnic and racial groups (e.g., Halpern et al., 2001). Therefore, the SDQ was also used to assess each participant’s ethnicity. Participants were asked “What is your ethnicity of origin?” and given the following options: Caucasian/White, African American/Black, Asian American/Pacific Islander, Native American/Alaskan Native, Hispanic/Latino(a), Biracial, or Other. Participants were allowed to specify their ethnicity if so desired. The final sample was primarily Caucasian. Among females, 86\% (n = 119) self-identified as Caucasian, 6\% (n = 8) self-identified as African American, 1\% (n = 1) self-identified as Asian American, 4\% (n = 5) self-identified as Hispanic, 3\% (n = 4) self-identified as Biracial, and 1\% (n = 1) self-identified as Other in their ethnic identity. Among males, 81\% (n = 112) self-identified as White, 9\% (n = 13) self-identified as African American, 2\% (n = 3) self-identified as Asian American, 1\% (n = 2) self-identified as Hispanic, 4\% (n = 5) self-identified as Biracial, and 2\% (n = 3) self-identified as Other in their ethnic identity. Given that the majority of the sample self-identified as Caucasian, the decision was made to group
ethnicity by Caucasian and Non-Caucasian individuals in the current sample to avoid drawing conclusions based upon limited sample sizes.

**Cohabitation Status.** Cohabitating dating partners are at greater risk for aggression (e.g., Stets & Straus, 1989). The SDQ was used to assess cohabitation status among dating couples. Participants were asked “What is your current living situation?” Cohabitation status was dichotomized. If either member of the couple endorsed that they lived with their romantic partner, the couple was classified as cohabitating at the time of study participation. Of the sample of 138 couples, 15% \((n = 21 \text{ couples})\) of the sample identified as cohabitating at the time of study.

**Relationship Length.** Greater length of dating relationships may increase risk for dating aggression (e.g., Luthra & Gidycz, 2006; Giordano, Soto, Manning, & Longmore, 2010; Hammock & O’Hearn, 2002). The SDQ was used to assess relationship length. Each member of the couple was asked how long they had been in their current romantic relationship. Responses were provided in months and were averaged among male and female responses in cases of discrepancy between respondents. Relationship lengths varied from 1 to 72 months at the time of study. The average relationship length was 17.75 months \((SD = 15.70)\).

**Romantic Relationship Satisfaction.** There is some evidence to suggest that relationship satisfaction is associated with dating aggression (e.g., Baker & Stith, 2008; Katz, Kuffel, & Coblentz, 2002). Relationship satisfaction was assessed using an adapted version of the well-validated Relationship Assessment Scale (RAS; Hendrick, 1988; Hendrick, Dicke, & Hendrick 1998). Participants were asked to rate their satisfaction with their current romantic partner on a five-point Likert scale across seven items (e.g., “In general, how satisfied are you with your
relationship?”). The average of these items served as an indicator of relationship satisfaction.

Note that items were calculated separately for females and males. Females \((M = 4.47, SD = .44)\) did not differ from males \((M = 4.50, SD = .42)\) in terms of average relationship satisfaction, \(t(137) = -.61, p = .54, d = .07\).

**Head Insult/Injury.** Across studies, head injury has been associated with marital aggression (Farrer et al., 2012), although the association is likely robust to head injury (Westby & Ferraro, 1999; Schafer & Fals-Stewart, 1997; Schafer et al., 1994; Teichner et al., 2001). To rule out the effects of head injury, a study specific General Health Screener (GH) was administered to each member of the romantic dyad. This 16-item self-report questionnaire assessed weight, sleep patterns, medications, surgical history, birth complications, head injury, loss of consciousness, smoking habits, medical conditions, and previous psychiatric disorders. For the purposes of the current study, endorsement of neurosurgery, birth complications, loss of consciousness after hitting one’s head, loss of memory after hitting one’s head, or feeling disoriented after hitting one’s head was used to create a dichotomous indicator of head insult/injury. Note, items regarding head injury were adapted from the work of Wilk and colleagues as used in military samples (e.g., Wilk, Thomas, McGurk, Riviere, Castro, & Hoge, 2010; United States Government Accountability Offices, 2009), as these are well-documented symptoms of concussion. Of the sample, 2 females (1%) reported unspecified tumors resection, 0 males (0%) reported tumor resection, 18 females (13%) reported birth complications (e.g., sick baby, breathing problems, prematurity), 19 males (14%) reported birth complications (e.g., blood disorder, lungs were not developed), 32 females (23%) reported experiencing at least 1 symptom associated with concussion in the past, and 64 males (46%) reported experiencing at least 1
symptom associated with concussion in the past. Males \((n = 74)\) were more likely to have experienced a head insult than females \((n = 59)\), \(X^2 (1, N = 267) = 13.15, p < .001.\)

**Alcohol Use.** In light of the literature suggesting that alcohol use is associated with executive functioning (Giancola, 2000) and dating aggression (e.g., Rothman et al., 2012), these symptoms were assessed using the Achenbach Adult Self-Report (ASR; Achenbach & Rescorla, 2003). The ASR is a 126 item, self-report questionnaire that was completed by both members of the couple to assess individual psychopathology. On the Alcohol scale of the Substance Use scale, participants were asked to write the number of days they had been drunk in the six months prior to assessment. Number of drinks served as an indicator of alcohol use. The ASR is a commonly used measure of psychopathology and has been documented to provide reliable and valid estimates of psychological functioning (Achenbach & Rescorla, 2003). Males \((M = 7.76, SD = 9.68)\) displayed more alcohol use than females \((M = 5.74, SD = 8.32)\) in the sample, \(t(126) = -2.23, p = .03, d = -.22.\) However, the average level of alcohol use for both females \((M = 58.42, SD = 7.43)\) and males \((M = 55.50, SD = 5.38)\) fell within normative clinical levels when T-scores were examined alongside normative samples.

**ADHD Symptoms.** ADHD is associated with executive dysfunction (Barkley, 1997) and dating aggression (e.g., Fang et al., 2010; Wymbs et al., 2012). For this reason, ADHD symptoms were assessed using the ASR (Achenbach & Rescorla, 2003). The 13-item, DSM-oriented scale of Attention Deficit/Hyperactivity Problems was used as the indicator of ADHD. Participants rated symptoms on a 3 point Likert Scale (scale \(0=Not\ true, 1=Somewhat\ or\ sometimes\ true, and 2=Very\ true\ or\ often\ true\)). Raw scores served as the indicator of ADHD symptoms. Females \((M = 7.15, SD = 4.68)\) and males \((M = 7.57, SD = 4.67)\) did not differ in
their level of ADHD symptoms, $t(134) = -.85, p = .40, d = .09$. Further, the average level of ADHD symptoms for both females ($M = 57.25, SD = 8.70$) and males ($M = 57.84, SD = 6.63$) were within normative clinical levels when T-scores were compared to normative samples.

**Premorbid IQ.** Because executive dysfunction, lower intelligence, and marital aggression co-occur (e.g., Marsh & Martinovich, 2006), intelligence was taken into account in the current study. Premorbid intelligence was estimated using the Spot-the-Word, Version A. Participants were asked to identify the real word from a non-word across 60 pairs of words (e.g., *daffodil* and *gombie*). This test has been shown to demonstrate adequate reliability and validity and to be useful in estimating premorbid intelligence ($r = .83$) in individuals between the age of 16 and 65 years of age (Baddeley, Emslie, & Nimmo-Smith, 1993). Females ($M = 46.04, SD = 4.31$) and males ($M = 46.94, SD = 4.65$) did not differ in their levels of premorbid intelligence, $t(109) = -1.54, p = .13, d = .20$. Further, as compared to normative scaled scores, both females’ ($M = 9.90, SD = 2.33$) and males’ ($M = 10.40, SD = 2.60$) average levels of premorbid intelligence fell within the average range.

**Clinically Normed Measure of Executive Functions.**

*Wisconsin Card Sorting Test (WCST).* The WCST is one of the most commonly used measures of executive functioning. The WCST Computer Version 4-Research Edition (WCST:CV4; Heaton & PAR Staff, 2008) is a computerized version of the 128-card version of the WCST (Berg, 1948; Grant & Berg, 1948). This task required participants to sort sequentially presented response cards to one of four exemplar cards. Three sorting rules (e.g., shape, color, number) are possible and change without the participants’ knowledge after achieving 10 consecutive correct sorting sequences. Participants were informed that only one sorting rule
applies to each card and are provided with computerized visual and auditory feedback (i.e., “right” or “wrong”) after each card was sorted. The number of perseverative errors—that is, the number of incorrect responses that correspond to the previous sorting rule—was used as the indicator of executive functioning and aligns with shifting difficulties (Miyake et al., 2000). Females ($M = 7.76, SD = 4.31$) and males ($M = 8.79, SD = 6.60$) did not significantly differ in terms of their raw number of perseverative errors, $t(127) = -1.96, p = .05, d = .18$. Clinical interpretation and norms that accompany the computerized program were used to provide information on clinical norms of the sample (Heaton, Chelune, Talley, Kay, & Curtiss, 1993). Females ($M = 57.68, SD = 8.59$) and males ($M = 55.83, SD = 9.48$) standardized performance, as measured by T-scores, fell within normative range of performance.

**Miyake and Colleagues’ (2000) Conceptualization of Executive Functions.**

The current study draws on Miyake et al.’s (2000) conceptual and operational definition of executive functioning abilities. For this reason, tasks were selected as guided by Miyake et al. (2000) and include measures of shifting, updating, and inhibition abilities. Note, shifting and updating abilities were assessed using tasks selected directly from the work of Miyake et al. (2000). However, rather than using the Stop-Signal task to measure inhibition as used by Miyake et al. (2000), the Go/No-Go task was used. This task is quite similar to the Stop-Signal task, although it is more commonly used in the neuropsychological literature. Moreover, this task has been demonstrated to measure prefrontal functioning (Casey et al., 1997; Kiefer, Marzinik, Weisbrod, Scherg, & Spitzer, 1998) and inhibition abilities in particular (Rubia et al., 2001). Note that other empirical works have substituted measures into Miyake and colleagues conceptualization of executive functions (e.g., Harvey et al., 2004).
**Shifting.** As proposed by Miyake et al. (2000), participants’ shifting abilities were measured using the Plus-Minus task as adapted from Jersild (1927) and Spector and Biderman (1976). Participants were presented with three lists of 30 numbers, generated from prerandomized numbers between 10 and 99 without replacement. For the first list, participants were asked to add 3 to each number. Next, on the second list, participants were instructed to subtract 3 from each number. On the third list, the participants were instructed to shift between adding and subtracting 3 from each number. Across lists, participants were asked to write their responses as quickly and accurately as possible. The dependent measure was time to completion on the third list after having taken into account performance on list one and two (i.e., average completion time across list one and two). Therefore, higher scores represented poorer executive functioning abilities. This task has been demonstrated to reliably and adequately load on shifting abilities (Miyake et al., 2000). Females ($M = 30.07$, $SD = 19.73$) and males ($M = 28.64$, $SD = 17.37$) did not significantly differ in their performances, $t(135) = .58$, $p = .56$, $d = .08$.

**Updating.** As guided by Miyake et al. (2000), the Letter Memory task was adapted from the work of Morris and Jones (1990). In this task, adapted for computer administration, participants were presented with a visual series of letters for 200 milliseconds per letter on a computer screen. At the end of the list of letters, participants were prompted to recall the last four letters presented in the list by the word “Recall” on the computer screen. Participants were to then manually enter the last four letters presented using the computer keyboard. To ensure participants were using updating abilities, the number of letters presented varied randomly across trials (i.e., 5, 7 9, or 11). For example, if the letters presented were “T, H, G, B, S, K, R,” participants would see the word “Recall” after the letter “R”; participants should have then enter
“BSKR” at the end of the trial. Participants practiced the task across two trials with five letters and two trials with six letters. The proposed dependent measure of proportion of letters recalled correctly was measured across 12 trials with a total of 48 letters possible for recall. Averages were created across the proportion of letters correctly recalled across prompts for the memory of 2 letters, 3 letters, and 4 letters. These averages were then inversed, such that higher scores represented poorer executive functioning abilities. The letter memory task has been demonstrated to reliably and adequately load on updating abilities (Miyake et al., 2000). Females ($M = .39, SD = .14$) and males ($M = .38, SD = .17$) did not significantly differ in terms of their inversed proportions of numbers of letters recalled across the task, $t(134) = .50, p = .62, d = .06$.

**Inhibition.** The Go/No-Go task was used to assess participants’ inhibition abilities. In this task, a series of individual letters were presented in the center of the computer screen in white against a black background. Participants were asked to press the spacebar when a go stimuli was presented (i.e., non-$X$ letters), but to refrain from pressing the spacebar when presented with a no-go stimuli (i.e., $X$). For each trial, individual letters were presented for 500 milliseconds, followed by a fixation point (+) presented on a blank screen for 2000 milliseconds. Participants were presented with two blocks of 128 trials, wherein they were asked to refrain from pressing the spacebar when presented with the letter $X$ on screen (i.e., no-go trials) and to press the spacebar when any other letter was presented (i.e., go trials). All go stimuli (i.e., non-$X$ letters) were randomly presented; go stimuli occurred on 80% of trials while no-go stimuli occurred 20% of trials. Only responses made within 2,500 milliseconds of presentation of each letter were counted. The proportion of errors (i.e., go responses on no-go stimuli) served as the dependent measure of inhibition. The Go/No-Go task has been demonstrated to reflect inhibition abilities in
other studies (Rubia et al., 2001). Females ($M = .22, SD = .13$) and males ($M = .25, SD = .16$) did not significantly differ in their performance, $t(133) = -1.84, p = .07, d = .21$.

**Dating Aggression.** The Conflict in Adolescent Dating Relationships Inventory (CADRI, Wolfe et al., 2001) was administered to participants to assess dating aggression occurring in the 12 months prior to the time of assessment with their current romantic partner. This 35-item, self-report measure assesses both perpetration and victimization across five subscales: Physical Abuse, Threatening Behavior, Sexual Abuse, Relational Aggression, and Emotional and Verbal Abuse. Participants were asked to rate the frequency with which they inflicted or received acts of aggression on a 4-point Likert Scale ($1 = Never; 2 = Seldom/1-2 conflicts; 3 = Sometimes/3-5 conflicts; 4 = Often/6 or more conflicts$). The CADRI has been demonstrated to display adequate reliability, validity, and inter-partner agreement (Wolfe et al., 2001) and has been used in college samples in previous works (e.g., Klipfel & van Dulmen, 2012; Roudsari, Leahy, & Walters, 2009; van Dulmen, Mata, & Klipfel, 2012).

**Psychological Aggression.** Psychological aggression was assessed using the Emotional and Verbal Abuse subscale of the CADRI (Wolfe et al., 2001). This scale includes 10-items, each of which assess perpetration (e.g., “I said things just to make him/her angry”) on the aforementioned 4-point Likert scale. The indicator of self-reported psychological aggression was be derived from each participant’s self-reports of psychological aggression perpetration. Participant responses were averaged within genders to create indicators for females and males. The emotional and verbal abuse subscale has been shown to demonstrate adequate reliability, validity, and agreement between dating partners (Wolfe et al., 2001). Within the current sample, this measure demonstrated good internal consistency across female self-reported psychological
aggression ($\alpha = .84$) and male self-reported psychological aggression ($\alpha = .83$). Consistent with extant literature (e.g., Foshee, 1996), females ($M = 1.87, SD = .53$) perpetrated more psychological aggression than males ($M = 1.74, SD = .51$) among the current sample, $t(137) = 2.87, p = .01, d = .25$.

Physical Aggression. Physical aggression was assessed by way of the four-item, Physical Abuse subscale of the CADRI (Wolfe et al., 2001). For females and males, self-reported physical aggression was derived from the average of perpetration items (e.g., “I kicked, hit, or punched him/her”). The physical abuse subscale has been shown to demonstrate adequate reliability and validity (Wolfe et al., 2001). Within the current sample, the measure demonstrated good internal consistency across female self-reported physical aggression ($\alpha = .76$) and male self-reported physical aggression ($\alpha = .78$). Again, consistent with extant literature (e.g., Foshee, 1996), females ($M = 1.13, SD = .32$) perpetrated more frequent physical aggression than males ($M = 1.04, SD = .20$) among the current sample, $t(137) = 2.74, p = .01, d = .34$.

Sexual Aggression. The Sexual Abuse subscale of the CADRI was used to assess sexual aggression. Participants reported frequency of sexual aggression across four items of sexual aggression perpetration (e.g., “I touched him/her sexually when he/she didn’t want me to”). Perpetration items were averaged to create indicators of females’ and males’ self-reported sexual aggression. Note, the Sexual Abuse subscale has been demonstrated to evidence somewhat lower reliability ($\alpha = .51$) and partner-agreement than the Emotional and Verbal Abuse and Physical Abuse subscales ($\alpha = .82, \alpha = .83$, respectively; Wolfe et al., 2001). However, Wolfe et al. (2001) conclude that the reliability of this scale is adequate for most research purposes, and the CADRI is a widely used measure of dating aggression. Consistent with Wolfe and colleagues.
findings, the reliability for male self-reported sexual aggression ($\alpha = .47$) was poor, though the reliability of female self-reported sexual aggression was adequate ($\alpha = .62$). As was expected based on extant literature (e.g., Foshee, 1996), males ($M = 1.22, SD = .32$) perpetrated more sexual aggression than females ($M = 1.11, SD = .27$) among the current sample, $t(137) = -3.65$, $p < .001$, $d = .37$. 
<table>
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<td>Alcohol Use</td>
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<td>Updating</td>
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<td>Dating Aggression</td>
<td>Psychological</td>
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<td>Mean frequency with current partner in past 12 months (4 point Likert)</td>
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<td>Physical</td>
<td>CADRI Physical Abuse Subscale-Self-report (n = 4)</td>
<td>Mean frequency with current partner in past 12 months (4 point Likert)</td>
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<td></td>
<td>Sexual</td>
<td>CADRI Sexual Abuse Subscale-Self-Report (n = 4)</td>
<td>Mean frequency with current partner in past 12 months (4 point Likert)</td>
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</table>
Analysis Plan

For all analyses, data was structured at the dyad level with separate indicators for females and males. Analyses were conducted in SPSS Version 21.0 (IBM Corporation, 2012) and Mplus (Muthén & Muthén, 2007).

Preliminary Analyses & Considerations.

Missing Data. All \( N = 138 \) couples had complete data on the outcome measures of psychological, physical, and sexual aggression in the current study. Among the predictor variables, less than 4% of data was missing on any variable. Missing data on neurocognitive measures was attributed to either researcher/equipment error or participant error. It is notable that the majority of missing data resulted from computer or stopwatch malfunctions and was therefore considered missing completely at random (e.g., Rubin, 1976; see Baraldi & Enders, 2010). However, some participants may not have fully understood testing directions or failed to complete the task as directed. As a result, 2 female participants’ data were considered missing data on the indicator of inhibition (i.e., Go/No-Go task). All other data appeared to be probable values upon visual inspection. Any missing data for predictor variables of executive dysfunction were imputed. To minimize the bias among the standard errors, missing data among study variables were imputed based on full information maximum likelihood (FIML) imputation procedures in Mplus (Muthén & Muthén, 2007). Hoyle (2011) has suggested that FIML is an appropriate technique to handle missing data in SEM analyses.

Control Variables. Bivariate correlations, t-tests, or one-way ANOVAs were used to determine whether age, ethnicity, cohabitation status, relationship length, relationship satisfaction, head insult/injury, alcohol use, ADHD symptoms, and premorbid IQ were related to the predictor variables of executive dysfunction, as well as outcome variables of psychological,
physical, or sexual dating aggression for each participant. Only those variables significantly \( (p < .05) \) associated with both the predictor variables of executive dysfunction and outcomes of psychological, physical, or sexual dating aggression were included as covariates across models to promote stability and replicability of the models.

**Statistical Power.** Cohen (1992) has suggested power criteria of .80 is required to correctly reject the null hypothesis. Given that the current study is dyadic, the guidelines of Kenny and colleagues (2006) were considered. In regard to power to detect non-independence among the data, Kenny et al. (2006) suggested that at least 25 dyads are necessary to assess for non-independence alongside less stringent criteria of non-independence (two-tailed alpha = .20; Myers, 1979). In regard to power to detect associations among predictor and outcome variables, further consideration is required. In a review of the literature, Kenny and colleagues found that the typical sample size for dyadic designs is 80 couples. Therefore, the current sample exceeds the average sample size for dyadic analyses. For this reason, I have assumed that the current study is adequately powered for analysis.

**Statistical Assumptions.** In order to conduct the proposed analyses, several assumptions were examined. Specifically, the data was examined for linearity, equal variance, and normality of predictor and outcome variables. Note, the criteria of Curran, West, and Finch (1996) was adopted to assess normality; variables were considered normal if skew values did not exceed two and kurtosis values did not exceed seven. Of the executive dysfunction and dating aggression variables, female physical aggression, female sexual aggression, and male physical aggression significantly departed from the proposed cut-off levels for kurtosis. Attempts were made to transform these non-normal variables using square-root or log transformations, though these
transformations did not significantly benefit the distribution. For this reason, the decision was made to run the analyses without transformation, using maximum likelihood estimation with robust standard errors (MLR). MLR offers estimates of standard errors and chi-square tests statistics that are robust to non-normality that parallels the Yuan-Bentler T² test (Yuan & Bentler, 2000). Thus, the chi-square difference testing was modified according to guidelines provided by Satorra & Bentler (2001) to produce scaled chi-square statistic in all models. In addition, outliers were examined across univariate and multivariate formats for all main study variables. Visual inspection of univariate outliers did not reveal any improbable values, with the exception of the aforementioned 2 data points that were removed for females for the Go/No-Go Task. Investigation of multivariate outliers among main study variables did not reveal multivariate outliers across variables of executive dysfunction or dating aggression, as indicated by deviation beyond 3 standard deviations in Mahalanobis distance (i.e., the squared distance in standard units of an observation from the mean among study variables). Taken together, the decision was made to include all data points as all data points were probable and not considered to detract from multivariate normality. Note that all study variables were standardized across the mean of the sample for SEM analyses to address discrepant metrics of study variables (Kenny et al., 2006).

**Indicators.** Consideration was given to structuring the current analyses with latent indicators of dating aggression (self-reported and partner-reported observed indicators) and executive functions (shifting, updating, and inhibition observed indicators) in light of literature suggesting that dating aggression (e.g., Gray & Foshee, 1997; Whitaker, Haileyesus, Swahn, & Saltzman, 2007; Straus & Ramirez, 2007; Wolfe et al., 2001) and subcomponents of executive
functions (Miyake et al., 2000) are moderately correlated. However, a requirement for latent models is convergent validity. Specifically, observed variables must show moderate correlations in order to demonstrate measurement of an underlying latent construct (Hatcher & O’Rourke, 2013). Unfortunately, neither the dating aggression [female psychological and physical aggression \((r = .19, p = .03)\), female physical and sexual aggression \((r = .50, p < .001)\), female sexual and psychological aggression \((r = .09, p = .29)\), male psychological and physical aggression \((r = .25, p = .003)\), male physical and sexual aggression \((r = .27, p = .001)\), male sexual and psychological aggression \((r = .34, p < .001)\)] nor the subcomponents of executive functions [female shifting and inhibition \((r = .14, p = .11)\), female shifting and updating \((r = .18, p = .03)\), female inhibition and updating \((r = .21, p = .02)\), male shifting and inhibition \((r = .25, p = .004)\), male shifting and updating \((r = .30, p < .001)\), male inhibition and updating \((r = .27, p = .001)\)] were consistently moderately correlated with one another. In regard to partner-reported dating aggression, female and male reports of female dating aggression perpetration were correlated across psychological \((r = .60, p < .001)\) and physical \((r = .44, p < .001)\) aggression, though were not correlated for sexual \((r = .12, p = .17)\) aggression. Male and female reports of male dating aggression perpetration were correlated across psychological \((r = .50, p < .001)\), physical \((r = .20, p = .02)\), and sexual \((r = .21, p = .01)\) aggression. However, the partner-reported dating aggression subscales tended to demonstrate lower reliabilities than the self-reported subscales of dating aggression [male partner-reported psychological aggression \((\alpha = .80)\), female partner-reported psychological aggression \((\alpha = .87)\), male partner-reported physical aggression \((\alpha = .50)\), female partner-reported physical aggression \((\alpha = .76)\), male partner-reported sexual aggression \((\alpha = .36)\), female partner-reported sexual aggression \((\alpha = .35)\)]. Taken
together, the decision was made to utilize only the self-reported indicators of aggression, as well as to examine the association for each subcomponent executive functioning ability (i.e., WCST, shifting, updating, and inhibition) separately.

**Dyadic Data.** Given that a dyadic study design was used in the current study, the data was examined for non-independence. It can be assumed that the dyadic data of the current study is inherently non-independent, which necessitates the use of dyadic data analysis techniques. For this reason, the Actor–Partner Interdependence Model (APIM; Kenny, Kashy, & Cook, 2006; Kashy & Kenny, 2000; Kenny, 1996; Kenny & Cook, 1999) was used within a structural equation modeling framework (SEM) to investigate Aims 1 and 2 of the current study. APIM techniques provide several advantages, which include accommodation of non-independence in the data by treating the couple as the unit of analysis and accommodation of mixed variables (i.e., those that vary within and between dyads). Therefore, this technique can extricate whether individual outcomes of dating aggression perpetration are associated with one’s own executive functioning characteristics (actor effect, $A$ see Figure 1), with one’s partner’s executive functioning characteristics (partner effect, $P$ see Figure 1), or with both one’s own and one’s partner’s executive functioning characteristics (couple effect, $A + P$). Therefore, actor-oriented models are those wherein actor effects significantly differ from zero while partner effects do not. Partner-oriented models are those wherein partner effects significantly differ from zero while actor effects are not significantly different than zero. When both actor and partner effects significantly differ from zero, the model is considered couple-oriented (Kenny et al., 2006). Note, that models that did not support interdependence among study variables (i.e., correlations less than .10 among males and females) were not modeled with intercorrelations among study
variables if model fit was worsened with the addition of these intercorrelations, which is a more stringent application of guidelines for consequential nonindependence proposed by Kenny and colleagues (2006, i.e., .45).

**Primary Analyses.**

**Aim 1 Analyses.** The focus of Aim 1 was to investigate the association between one’s own executive functioning abilities and the frequency of one’s own use of dating aggression, with attention to the role of gender on this association. Using a SEM framework, APIM techniques were used to investigate whether the hypothesized positive association was significant among one’s own executive dysfunction and dating aggression. The model was first conducted using perseverative errors of the WCST, as it is a clinically normed indicator that has been used in marital aggression literature. In addition, consistent with the work of Miyake et al. (2000), the association between executive dysfunction and dating aggression was investigated among shifting (i.e., completion time of Plus-Minus Task), updating (i.e., number correct on Letter Memory Task), and inhibition (i.e., number correct on Go/No-Go Task; see Table 1) difficulties. In regard to outcome measures of dating aggression, psychological, physical, and sexual self-reported dating aggression perpetration were investigated. Separate APIMs were conducted for each of the indicators of executive dysfunction along with each of the proposed subtypes of dating aggression—namely psychological, physical, and sexual aggression. This required 12 separate APIM analyses (see Figure 1 for example) to investigate actor effects across models (Kenny et al., 2006).
Figure 1. Actor-Partner Interdependence Model of executive dysfunction predicting dating aggression within a structural equation modeling framework.

Note. A = Actor effect, P = Partner effect, 1 = Constraint 1, 2 = Constraint 2.

Controls:
- Age
- Ethnicity
- Cohabitation Status
- Relationship Length
- Relationship satisfaction
- Brain Insult/Injury
- Psychopathology
- Premorbid IQ
For each model, I first investigated the measurement model as suggested by Kenny and colleagues (Kenny et al., 2006; Kenny & Ledermann, 2010). Final model fit estimates, path coefficients, and significance values were estimated from a final structural model with all of the proposed paths and covariates in the model (Kenny et al., 2006; Kenny & Ledermann, 2010).

As suggested by Kenny et al. (2006), comparative fit indices (CFI), root mean squared error of approximation (RMSEA) values, and chi-square values were used as indicators of model fit. CFI indicates model fit relative to the null model. A CFI greater than .95 is indicative of excellent model fit, and a CFI value less than .90 is indicative of poor model fit (Hancock & Mueller, 2011; Hu & Bentler, 1998; Kenny et al., 2006). RMSEA provides an absolute measure of model fit (Steiger & Lind, 1980 as cited by Kenny et al., 2006). Smaller RMSEA models indicate better model fit, with poor model fit indicated by RMSEA values greater than .10 (Kenny et al., 2006). Chi-square statistics are limited as they are influenced by sample size. However, this index was used to examine model fit for each model in conjunction with the aforementioned indices; smaller chi-square statistics are indicative of better fit (Hancock & Mueller, 2011; Kenny et al., 2006).

**Aim 1a analyses.** To investigate Aim 1a, covariates, intercorrelations among variables, and all actor and partner paths were modeled for each construct of executive dysfunction (i.e., WCST, shifting, updating, inhibition) predicting each outcome of dating aggression (i.e., psychological, physical, and sexual aggression; see Figure 1 for example depiction of full structural models). For each model, only control variables that were significantly associated with both executive functions and dating aggression were incorporated into the model. Hypothesis I, as well as Hypotheses Ia-Id, were considered supported if one’s own executive dysfunction was
positively associated with one’s own psychological dating aggression perpetration for both females and males across each of the respective models (i.e., actor effects, \( A \); see Figure 1). Hypothesis II, as well as Hypotheses IIa-IIId, were considered supported if there were positive associations between one’s own executive dysfunction and one’s own physical dating aggression perpetration for females and males across each of the respective models (i.e., actor effects, \( A \); see Figure 1). Finally, Hypothesis III, as well as Hypotheses IIIa-IIId, were considered confirmed if positive associations were found between one’s own executive dysfunction and one’s own use of sexual dating aggression for females and males across models (i.e., actor effects, \( A \); see Figure 1). Standardized regression coefficients, unstandardized regression coefficients, confidence intervals, and \( p \) values were used for each actor path to determine statistical significance.

\textit{Aim 1b analyses.} To address Aim 1b of the current study, I investigated gender differences in the association between one’s own executive dysfunction and one’s own dating aggression perpetration. To this end, equality constraints were placed on the actor effects in the aforementioned APIM analyses. More specifically, equality constraints were placed on females’ path between females’ executive dysfunction and females’ dating aggression and on males’ path between males’ executive dysfunction and males’ dating aggression across each of the models (see Figure 1). Again, these constraints were placed within each of the 12 proposed APIM analyses.

Model fit indices were used to examine whether constraining female and male actor effects result in a significant worsening of the model (Kenny et al., 2006). CFI and chi-square statistics were used to examine changes in model fit. Significant chi-square difference tests indicate that constraining a path has significantly worsened the fit of the model (Kenny et al.,
2006), and a negative change in CFI that exceeds .01 also indicates significantly worsened model fit (Cheung & Rensvold, 2002). Therefore, the change in chi-square statistic and CFI value were used comparatively in the models, wherein significant worsening of model fit was considered to be indicative of meaningful gender differences.

While no specific hypotheses were made, Hypothesis IV was explored by placing an equality constraint on the association between females’ own executive dysfunction and females’ own psychological dating aggression alongside an equality constraint on the association between males’ own executive dysfunction and males’ own psychological dating aggression for each of the models (see Figure 1; Constraint 1). Note, then, that constraints were placed in each model of psychological aggression to examine Hypotheses IVa-IVd. To investigate Hypothesis V, as well as Hypotheses Va-Vd, equality constraints were placed on the association between females’ own executive dysfunction and females’ physical dating aggression perpetration, as well as on the association between males’ own executive dysfunction and males’ physical dating aggression perpetration across models (see Figure 1; Constraint 1). Hypothesis VI, including Hypotheses VIa-VId, were examined by way of equality constraints on the paths between females’ executive dysfunction and females’ sexual dating aggression and the path between males’ executive dysfunction and males’ sexual dating aggression (see Figure 1; Constraint 1). Worsening of model fit, as evidenced by significant change in chi-square statistics and CFI values, was considered indicative of gender differences.

Aim 2 Analyses. Aim 2 investigated the association between one’s own executive functions and the frequency of one’s dating partner’s use of dating aggression, as well as gender differences in this association. The hypothesized positive association between one’s own
executive dysfunction and one’s partner’s dating aggression was investigated within the
aforementioned APIM analyses in a SEM framework (see Figure 1). Standardized regression
coefficients, unstandardized regression coefficients, confidence intervals, and p values were
estimated from the structural model for each of the partner effects (P, see Figure 1) across
models of psychological, physical, and sexual aggression with each indicator of executive
dysfunction (i.e., WCST, shifting, updating, inhibition).

Aim 2a analyses. Hypothesis VII, as well as Hypotheses VIIa-VIIId, were considered
confirmed if one’s own executive dysfunction was positively associated with one’s partner’s
psychological dating aggression perpetration for both females and males across models (i.e.,
partner effects, P; see Figure 1). Hypothesis VIII, as well as Hypotheses VIIIa-VIIIId, were
considered supported if there were statistically significant positive associations between one’s
own executive dysfunction and one’s partner’s physical dating aggression perpetration for
females and males across each model (i.e., partner effects, P; see Figure 1). Finally, Hypothesis
IX and Hypotheses IXa-IXd were considered confirmed if a significant positive associations
were found between one’s own executive dysfunction and one’s partner’s use of sexual dating
aggression for females and males across each model (i.e., partner effects, P; see Figure 1).
Standardized regression coefficients, unstandardized regression coefficients, confidence
intervals, and p values were used for each path to determine statistical significance of partner
effects.

Aim 2b Analyses. Aim 2b focused on gender differences in the association between one’s
own executive functions and one’s partner’s dating aggression. To this end, equality constraints
were placed on females’ path between females’ own executive dysfunction and males’ dating
aggression and on males’ path between males’ own executive dysfunction and females’ dating aggression across models. Thus, these constraints were placed on partner effects within each of the 12 proposed APIM analyses (see Figure 1).

Hypotheses pertaining to Aim 2b were exploratory in nature. Hypothesis X, as well as Hypotheses Xa-Xd, were investigated by placing equality constraints on the association between females’ executive dysfunction and their male partners’ psychological dating aggression and an equality constraint on the association between males’ executive dysfunction and their female partners’ psychological dating aggression for each model (see Figure 1, Constraint 2). Hypothesis XI and Hypotheses XIa-XIId were examined by placing equality constraints on the path between females’ executive dysfunction and males’ physical dating aggression perpetration as well as on the path between males’ executive dysfunction and females’ physical dating aggression perpetration (see Figure 1; Constraint 2). To investigate Hypothesis XII and Hypotheses XIIa-XIIId equality constraints were placed on the association between females’ executive dysfunction and their male partners’ sexual dating aggression alongside the association between males’ executive dysfunction and their female partners’ sexual dating aggression for each of the models (see Figure 1, Constraint 2). Significant changes in chi-square statistics and CFI values that resulted from constraining pathways to be equal were interpreted to confirm significant gender differences.

**Aim 3 Analyses.** Aim 3 investigated the relative contribution of executive functioning abilities to subtypes of dating aggression among females and males.

**Aim 3a analyses.** Aim 3a of the current study explored the magnitude of association between females’ executive functions and subtypes of dating aggression. SEM analyses were
conducted as illustrated in Figures 2, as Card and Little (2007) have suggested that SEM procedures are particularly useful in the study of aggressive behaviors.
Figure 2. Structural equation model assessing the relative contribution of executive dysfunction to each subtype of dating aggression.
Note. 1 = Comparison 1, 2 = Comparison 2, 3 = Comparison 3 using equality constraints.
Four separate models were conducted for each of the observed constructs of executive dysfunction (i.e., WCST, shifting, updating, and inhibition indicators). In each model, indicators of executive dysfunction were modeled to simultaneously predict each subtype of dating aggression perpetration for females. Again, dating aggression was measured through the observed indicator of self-reported dating aggression perpetration (i.e., psychological, physical, and sexual aggression). A full, structural model depicted in Figures 2 was conducted for each indicator of executive dysfunction. Model fit indices of CFI, RMSEA, and chi-square statistics were used to evaluate model fit as described above. To examine the relative contribution of females’ executive dysfunction to each subtype of dating aggression, equality constraints were placed to pairwise compare each subtype of dating aggression. Again, standardized path coefficients, unstandardized path coefficients, and p values were estimated; CFI and chi-square difference statistics were used to evaluate whether the model was significantly worsened by constraining paths to be equal. While no a priori hypotheses were made for Aim 3a, Hypothesis XIII, along with Hypotheses XIIIa-XIIIId, were investigated by placing equality constraints on the paths between females’ executive dysfunction and psychological aggression and equality constraints on the paths between females’ executive dysfunction and physical aggression across models (see Figure 2, Constraint 1). Similarly, to investigate Hypothesis XIV and Hypotheses XIVa-XIVd pairwise equality constraints were placed on the paths between females’ executive dysfunction and physical dating aggression as well as on the paths between females’ executive dysfunction and sexual dating aggression across models (see Figure 2, Constraint 2). Finally, Hypothesis XV, as well as Hypotheses XVa-XVd, were investigated through the placement of equality constraints on the association between females’ executive dysfunction and
psychological aggression as well as on the association between females’ executive dysfunction and sexual aggression (see Figure 2, Constraint 3). Across these analyses, CFI and chi-square difference tests were used to examine whether model fit was worsened by constraining paths to be equal. Significant decrements to model fit provided evidence for a greater contribution of executive dysfunction to subtypes of dating aggression (i.e., psychological, physical, or sexual dating aggression).

Aim 3b analyses. The final aim of the proposed study explored the relative magnitude of the contribution of males’ executive functioning to each of the subtypes of dating aggression. SEM models were conducted as illustrated in Figure 2. In these models, males’ individual indicators of executive dysfunction (i.e., shifting, updating, and inhibition indicators) were modeled to simultaneously predict each indicators of the subtypes of dating aggression perpetration across 4 separate models. Again, CFI and chi-square statistics were used to assess model fit. To assess Aim 3b, pairwise equality constraints were placed to compare the relative contribution of males’ executive dysfunction to each subtype of dating aggression. Standardized regression coefficients, unstandardized regression coefficients, and p values were also provided for each SEM path. To explore Hypothesis XVI, as well as Hypotheses XVIa-XVIId, equality constraints were placed on the paths between males’ executive dysfunction and psychological aggression and on the paths between males’ executive dysfunction and physical aggression across models (see Figure 2, Constraint 1). Next, Hypothesis XVII and Hypotheses XVIIa-XVIIId were investigated by way of pairwise equality constraints on the paths between males’ executive dysfunction and physical dating aggression and the paths between males’ executive dysfunction and sexual dating aggression across models (see Figure 2, Constraint 2). Lastly, to
investigate Hypothesis XVIII, as well as Hypotheses XVIIIa-XVIIId, equality constraints were placed on the associations among males’ executive dysfunction and psychological aggression as well as on the associations among males’ executive dysfunction and sexual aggression across models (see Figure 2, Constraint 3). As discussed above, CFI and chi-square difference tests were used to examine whether executive dysfunction was more strongly associated with any of the subtypes of dating aggression (i.e., psychological, physical, or sexual dating aggression) as evidenced by worsened model fit.
RESULTS

Preliminary Analyses

Descriptive Statistics. Bivariate correlations, means, and standard deviations among all the main study variables (i.e., executive dysfunction and dating aggression variables) are reported in Table 2 below. Note that the correlations suggest evidence for assortative mating among male and female executive functions as measured by the WCST \( (r = .19, p = .03) \). However, evidence for assortative mating was not found among indicators of shifting, updating, or inhibition tasks of executive functioning (see Table 2). Moreover, females and males showed assortative mating in their psychological \( (r = .45, p < .001) \) and sexual \( (r = .19, p = .03) \) dating aggression perpetration. However, they did not show a tendency to be similar in terms of their use of physical aggression \( (r = .12, p = .16) \). In addition, some evidence was found for a tendency for subtypes of aggression to co-occur within individuals. This was such that female physical aggression and female sexual aggression \( (r = .19, p = .03) \) and female physical aggression and female psychological aggression \( (r = .50, p < .001) \) were positively associated, though female sexual aggression and psychological aggression were not significantly associated \( (r = .09, p = .29) \). Among males, male physical aggression and male sexual aggression \( (r = .27, p = .001) \), male physical aggression and male psychological aggression \( (r = .25, p = .003) \), and male sexual aggression and male psychological aggression \( (r = .34, p < .001) \) were positively associated.
Table 2

Bivariate Correlations, Means, and Standard Deviations of Executive Dysfunction and Dating Aggression Variables (N = 138 couples)

<table>
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<th>Variables</th>
<th>1</th>
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<td>2. Male WCST</td>
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<td>3. Female Shifting</td>
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<td>4. Male Shifting</td>
<td>-.10</td>
<td>.01</td>
<td>-.07</td>
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Note. * p < .05. ** p < .01 *** p < .001.
Control Variables. Of the variables considered for controls in the current study, only relationship satisfaction and premorbid IQ were associated with both executive dysfunction and dating aggression within their respective gender (see Tables 3-8). Specifically, greater male satisfaction was found to be negatively associated with executive dysfunction for the updating subcomponent of executive functions ($r = -.29, p = .001$), in turn suggesting that greater satisfaction was associated with less executive dysfunction. In addition, greater male satisfaction was associated with lower frequency of both psychological ($r = -.40, p < .001$) and sexual ($r = -.21, p = .01$) dating aggression perpetration. In terms of premorbid IQ, greater premorbid female IQ was associated with less executive dysfunction for the updating subcomponent of executive functions ($r = -.24, p = .01$). Higher premorbid female IQ was associated with greater physical dating aggression perpetration ($r = .19, p = .04$). For males, greater premorbid IQ was negatively associated with executive dysfunction for the updating subcomponent of executive functions ($r = -.41, p < .001$). In addition, greater premorbid IQ was found to be associated with less frequent sexual aggression perpetration for males ($r = -.18, p = .048$). For these reasons, these indicators were controlled for across appropriate models.
Table 3

Bivariate Correlations, Means, and Standard Deviations of Continuous Control Variables with Executive Dysfunction and Dating Aggression Variables (N = 138 couples)

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Note. * p < .05. ** p < .01 *** p < .001. F = Female, M = Male, Psych = Psychological, Phys = Physical, Sex = Sexual, Agg = Aggression, RLgth = Relationship Length, Sat = Satisfaction, Alc = Alcohol
Table 4

*T-Tests, Means, and Standard Deviations of Dichotomous Control Variable of Ethnicity with Executive Dysfunction and Dating Aggression Variables for Females*

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F = Female, M = Male, Psych = Psychological, Phys = Physical, Sex = Sexual, Agg = Aggression
Table 5

*T-Tests, Means, and Standard Deviations of Dichotomous Control Variable of Ethnicity with Executive Dysfunction and Dating Aggression Variables for Males*

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</table>

F = Female, M = Male, Psych = Psychological, Phys = Physical, Sex = Sexual, Agg = Aggression
Table 6

*T-Tests, Means, and Standard Deviations of Dichotomous Control Variable of Cohabitation Status with Executive Dysfunction and Dating Aggression for Females and Males (n = 138)*

<table>
<thead>
<tr>
<th>Variables</th>
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<th>Non-Cohabitating</th>
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</thead>
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<tr>
<td></td>
<td>Mean</td>
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<tr>
<td>F_WCST</td>
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<td>F_Update</td>
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<td>M_Update</td>
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</tr>
<tr>
<td>F_Inhibition</td>
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<td>.13</td>
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<tr>
<td>M_Inhibition</td>
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<td>.17</td>
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<tr>
<td>F_Psych_Agg</td>
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<td>F_Phys_Agg</td>
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<td>M_Phys_Agg</td>
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<tr>
<td>F_Sex_Agg</td>
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</tr>
<tr>
<td>M_Sex_Agg</td>
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<td>.40</td>
</tr>
</tbody>
</table>

Note. Cohabitation status is the same for females and males.
F = Female, M = Male, Psych = Psychological, Phys = Physical, Sex = Sexual, Agg = Aggression
Table 7

*T-Tests, Means, and Standard Deviations of Dichotomous Control Variable of Head Insult/Injury with Executive Dysfunction and Dating Aggression Variables for Females (n = 134)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Head Insult/Injury</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>F_WCST</td>
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<td>M_WCST</td>
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<td>M_Shifting</td>
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<td>F_Updating</td>
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<td>M_Updating</td>
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<td>M_Inhibition</td>
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<td>M_Sex_Agg</td>
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</tr>
</tbody>
</table>

F = Female, M = Male, Psych = Psychological, Phys = Physical, Sex = Sexual, Agg = Aggression
Table 8

*T-Tests, Means, and Standard Deviations of Dichotomous Control Variable of Head Insult/Injury with Executive Dysfunction and Dating Aggression Variables for Males (n = 133)*

<table>
<thead>
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</thead>
<tbody>
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<td>M_Updaging</td>
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<tr>
<td>F_Inhibition</td>
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</tr>
<tr>
<td>M_Inhibition</td>
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<tr>
<td>F_Psych_Agg</td>
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<tr>
<td>F_Phys_Agg</td>
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<tr>
<td>M_Phys_Agg</td>
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<td>F_Sex_Agg</td>
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</tr>
<tr>
<td>M_Sex_Agg</td>
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<td>.34</td>
</tr>
</tbody>
</table>

F = Female, M = Male, Psych = Psychological, Phys = Physical, Sex = Sexual, Agg = Aggression
Primary Analyses

For each study aim, model fit information is presented first. Following this information, results for each specific aim are presented, with conclusions related to study hypotheses embedded within study aims.

Baseline Model Fit for Study Aims 1 & 2. Model fit was generally poor for APIMs examining psychological aggression, with the exception of the model using updating as the indicator of executive dysfunction. The APIM for the WCST, as associated with psychological aggression, did not represent the data well \( \chi^2 (3) = 12.91, p = .005; CFI = .81; RMSEA = 0.16 \], with male satisfaction as a control \[ \beta = -.31, B = -.30, SE = .08, p < .001 \] and the intercorrelations for the WCST \((r = .20, p = .07)\) and psychological aggression \((r = .40, p < .001)\) included in the model. Similarly, model fit was poor for the APIM examining shifting and psychological aggression \( \chi^2 (3) = 10.01, p = .02; CFI = .85; RMSEA = 0.13 \]. Because the intercorrelation was not significant between female and male shifting abilities in this model \((r = -.07, p = .40)\), the model was examined without this correlation which worsened model fit \( \chi^2 (1) = 9.66, p = .002; CFI = .82; RMSEA = 0.25 \]. Therefore, the decision was made to retain the model with male satisfaction as a control \[ \beta = -.31, B = -.30, SE = .08, p < .001 \] and the intercorrelations for shifting \((r = -.07, p = .40)\) and psychological aggression \((r = .40, p < .001)\) included in the model. Model fit was also poor for the APIM examining updating and psychological aggression \( \chi^2 (3) = 18.79, p < .001; CFI = .67; RMSEA = .20 \]. Again, the intercorrelation was not significant among female and male updating abilities in this model \((r = -.03, p = .72)\), and the correlation was removed. Final model fit showed mixed model fit, in that the CFI was adequate though the RMSEA indicated poor model fit \( \chi^2 (1) = 5.70, p = .02; CFI = \)
.90; RMSEA = 0.18] with male satisfaction as a control [$\beta = -.34$, $B = -.33$, $SE = .08$, $p < .001$] and the intercorrelation for psychological aggression ($r = .41, p < .001$) included in the model. Finally, model fit for the APIM examining inhibition and psychological aggression was poor before [$\chi^2 (3) = 17.43, p < .001; CFI = .73; RMSEA = .19$] dropping the non-significant intercorrelation among female and male inhibition abilities ($r = .09, p = .34$). The model fit remained poor after dropping this correlation [$\chi^2 (1) = 10.79, p = .001; CFI = .82; RMSEA = 0.27$] with male satisfaction as a control [$\beta = -.35$, $B = -.34$, $SE = .08$, $p < .001$] and the intercorrelation for psychological aggression ($r = .38, p < .001$) included in the model. Across these APIMs of psychological aggression, the models explained 2-4% of the variance in females’ psychological aggression and 10-13% of the variance in males’ psychological aggression (see Figures 3-6). Note, because model fit was generally poor for models examining WCST, shifting, and inhibition difficulties with outcomes of psychological aggression, specific results from these models will be presented for informational purposes only but should not be substantively interpreted due to potential lack of stability and replicability of these models.
Figure 3. Actor-Partner Interdependence Model of executive dysfunction, as measured by the WCST, predicting psychological dating aggression within a structural equation modeling framework. Note. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Standardized results are presented. Significant gender differences are represented by corresponding letters. Model Fit: $\chi^2 (3) = 12.91, p = .005$; $CFI = .81$; $RMSEA = 0.16$, Female Psychological Aggression $R^2 = .02$, Male Psychological Aggression $R^2 = .10$. 
Figure 4. Actor-Partner Interdependence Model of shifting subcomponent of executive dysfunction predicting psychological dating aggression within a structural equation modeling framework. Note. $p < .10$, $* p < .05$, $** p < .01$, $*** p < .001$. Standardized results are presented. Significant gender differences are represented by corresponding letters. Model Fit: $\chi^2(3) = 10.01, p = .02; CFI = .85; RMSEA = 0.13$, Female Psychological Aggression $R^2 = .02$, Male Psychological Aggression $R^2 = .10$. 
Figure 5. Actor-Partner Interdependence Model of updating subcomponent of executive dysfunction predicting psychological dating aggression within a structural equation modeling framework. Note. + p < .10, * p < .05, ** p < .01, *** p < .001. Standardized results are presented. Significant gender differences are represented by corresponding letters. Model Fit: $\chi^2$ (1) = 5.70, $p = .02$; $CFI = .90$; $RMSEA = 0.18$, Female Psychological Aggression $R^2 = .04$, Male Psychological Aggression $R^2 = .11$. 
Figure 6. Actor-Partner Interdependence Model of inhibition subcomponent of executive dysfunction predicting psychological dating aggression within a structural equation modeling framework. Note. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Standardized results are presented. Significant gender differences are represented by corresponding letters. Model Fit: $\chi^2 (1) = 10.79, p = .001$; $CFI = .82$; $RMSEA = 0.27$, Female Psychological Aggression $R^2 = .03$, Male Psychological Aggression $R^2 = .13$. 
In terms of the APIMs with outcomes of physical aggression, model fit was generally good. The model for the WCST and physical aggression represented the data well \( \chi^2 (3) = .54, p = .91; CFI = 1.00; RMSEA = .00 \), with the inclusion of female premorbid IQ as a control \([\beta = -.18, B = -.18, SE = .07, p = .02]\) and the intercorrelations for the WCST \( (r = .20, p = .07)\) and physical aggression \( (r = .12, p = .28)\) included in the model. Similarly, model fit was excellent for the APIM examining shifting and physical aggression \( \chi^2 (3) = .04, p = 1.00; CFI = 1.00; RMSEA = .00 \). Again the intercorrelation was not significant among female and male shifting abilities in this model \( (r = -.07, p = .40)\), though model fit was not significantly benefited from removing this correlation \( \chi^2 (1) = .001, p = .97; CFI = 1.00; RMSEA = .00 \). Therefore, the initial model was retained with female premorbid IQ as a control \([\beta = -.18, B = -.18, SE = .08, p = .02]\) and the intercorrelations for shifting \( (r = -.07, p = .40)\) and physical aggression \( (r = .13, p = .21)\) included in the model. Initial model fit was poor for the APIM examining updating and physical aggression \( \chi^2 (3) = 12.94, p = .005; CFI = .00; RMSEA = .16 \). However, the intercorrelation was not significant among female and male updating abilities in this model \( (r = -.03, p = .72)\), and the correlation was removed. Following the removal of this correlation, the model showed excellent model fit \( \chi^2 (1) = .01, p = .92; CFI = 1.00; RMSEA = .00 \) with female premorbid IQ as a control \([\beta = -.14, B = -.15, SE = .07, p = .046]\) and the intercorrelations for physical aggression \( (r = .12, p = .25)\) included in the model. Model fit for the APIM examining inhibition and physical aggression was excellent initially \( \chi^2 (3) = .71, p = .87; CFI = 1.00; RMSEA = .00 \) with female premorbid IQ as a control \([\beta = -.10, B = -.18, SE = .08, p = .02]\) and the intercorrelations for inhibition \( (r = .09, p = .34)\) and physical aggression \( (r = .10, p = .38)\) included in the model. After the removal of the non-significant intercorrelation among female and male inhibition \( (r =
.09, \( p = .34 \), model fit did not significantly improve \( \chi^2(1) = .002, p = .96; \ CFI = 1.00; \ RMSEA = .00 \), and the initial model was retained. Across these APIMs of physical aggression, the models explained 5-8% of the variance in females’ physical aggression and 0-2% of the variance in males’ physical aggression (see Figures 7-10).
Figure 7. Actor-Partner Interdependence Model of executive dysfunction, as measured by the WCST, predicting physical dating aggression within a structural equation modeling framework. Note. + p < .10, * p < .05, ** p < .01, *** p < .001. Standardized results are presented. Significant gender differences are represented by corresponding letters. Model Fit: $\chi^2(3) = .54, p = .91; CFI = 1.00; RMSEA = .00$, Female Physical Aggression $R^2 = .05$, Male Physical Aggression $R^2 = .002$. 
Figure 8. Actor-Partner Interdependence Model of shifting subcomponent of executive dysfunction predicting physical dating aggression within a structural equation modeling framework. Note. $+ p < .10$, $* p < .05$, $** p < .01$, $*** p < .001$. Standardized results are presented. Significant gender differences are represented by corresponding letters. Model Fit: $\chi^2(3) = .04, p = 1.00$; $CFI = 1.00$; $RMSEA = .00$, Female Physical Aggression $R^2 = .07$, Male Physical Aggression $R^2 = .01$. 
Figure 9. Actor-Partner Interdependence Model of updating subcomponent of executive dysfunction predicting physical dating aggression within a structural equation modeling framework. Note. + \( p < .10 \), * \( p < .05 \), ** \( p < .01 \), *** \( p < .001 \). Standardized results are presented. Significant gender differences are represented by corresponding letters. Model Fit: \( \chi^2 (1) = .01, p = .92; CFI = 1.00; RMSEA = .00 \), Female Physical Aggression \( R^2 = .05 \), Male Physical Aggression \( R^2 = .001 \).
Figure 10. Actor-Partner Interdependence Model of inhibition subcomponent of executive dysfunction predicting physical dating aggression within a structural equation modeling framework. Note. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Standardized results are presented. Significant gender differences are represented by corresponding letters. Model Fit: $\chi^2(3) = .71, p = .87; CFI = 1.00; RMSEA = .00$, Female Physical Aggression $R^2 = .08$, Male Physical Aggression $R^2 = .02$. 
For APIMs with outcomes of sexual aggression, model fit was generally good. The model for the WCST and sexual aggression showed mixed model fit, such that the CFI was poor but the RMSEA was adequate $[\chi^2(6) = 8.52, p = .20; CFI = .65; RMSEA = .06]$. Note, control variables for male premorbid IQ $[\beta = -.16, B = -.16, SE = .10, p = .12]$ and male satisfaction $[\beta = -.16, B = -.16, SE = .09, p = .07]$, as well as intercorrelations for the WCST ($r = .19, p = .07$) and sexual aggression ($r = .17, p = .14$) were included in the model. Model fit for the APIM examining shifting and sexual aggression was excellent $[\chi^2(6) = 6.14, p = .41; CFI = .99; RMSEA = .01]$ with the inclusion of control variables for male premorbid IQ $[\beta = -.15, B = -.15, SE = .10, p = .13]$ and male satisfaction $[\beta = -.14, B = -.14, SE = .08, p = .09]$, as well as intercorrelations for shifting difficulties ($r = -.07, p = .40$) and sexual aggression ($r = .18, p = .12$). Removal of the nonsignificant intercorrelation for among male and female shifting abilities did not improve model fit $[\chi^2(2) = 2.94, p = .23; CFI = .90; RMSEA = .06]$, and thus the original model was maintained. Initial model fit was poor for the APIM examining updating and sexual aggression $[\chi^2(6) = 30.81, p < .001; CFI = .00; RMSEA = .17]$. Again, the intercorrelation was not significant between female and male updating abilities ($r = -.03, p = .73$), and the correlation was removed. Following the removal of this correlation, the model showed poor model fit by way of CFI estimates, though adequate model fit by way of RMSEA estimates $[\chi^2(2) = 3.42, p = .18; CFI = .86; RMSEA = .07]$, and this final model was retained. Note, control variables for male premorbid IQ $[\beta = -.13, B = -.13, SE = .12, p = .26]$ and male satisfaction $[\beta = -.15, B = -.14, SE = .10, p = .13]$, as well as the intercorrelation for sexual aggression ($r = .19, p = .09$) were included in this model. Next, model fit for the APIM examining inhibition and sexual aggression was poor initially $[\chi^2(6) = 15.02, p = .02; CFI = .00; RMSEA = .10]$ with the non-significant
intercorrelation between female and male inhibition difficulties ($r = .09, p = .34$) in the model. After removal of this intercorrelation, model fit was good [$\chi^2 (2) = 2.93, p = .23; CFI = .90; RMSEA = .06$] with control variables for male premorbid IQ [$\beta = -.18, B = -.18, SE = .10, p = .08$] and male satisfaction [$\beta = -.18, B = -.18, SE = .09, p = .047$] and the intercorrelation for sexual aggression ($r = .17, p = .12$) included in this final model. Across these APIMs of sexual aggression, the models explained 0-2% of the variance in females’ aggression and 6-8% of the variance in males’ aggression (see Figures 11-14).
Figure 11. Actor-Partner Interdependence Model of executive dysfunction, as measured by the WCST, predicting sexual dating aggression within a structural equation modeling framework. Note. $+ p < .10$, $* p < .05$, $** p < .01$, $*** p < .001$. Standardized results are presented. Significant gender differences are represented by corresponding letters. Model Fit: $\chi^2 (6) = 8.52, p = .20$; $CFI = .65$; $RMSEA = .06$, Female Sexual Aggression $R^2 = .01$, Male Sexual Aggression $R^2 = .06$. 

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Female Executive Dysfunction (WCST)  
Male Executive Dysfunction (WCST)  
Female Sexual Dating Aggression  
Male Sexual Dating Aggression  
Male Relationship Satisfaction  
Male Premorbid IQ
Figure 12. Actor-Partner Interdependence Model of shifting subcomponent of executive dysfunction predicting sexual dating aggression within a structural equation modeling framework. Note. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Standardized results are presented. Significant gender differences are represented by corresponding letters. Model Fit: $\chi^2(6) = 6.14$, $p = .41$; $CFI = .99$; $RMSEA = .01$, Female Sexual Aggression $R^2 = .003$, Male Sexual Aggression $R^2 = .08$. 
Figure 13. Actor-Partner Interdependence Model of updating subcomponent of executive dysfunction predicting sexual dating aggression within a structural equation modeling framework. Note. $+ p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$. Standardized results are presented. Significant gender differences are represented by corresponding letters. Model Fit: $\chi^2(2) = 3.42, p = .18$; $CFI = .86$; $RMSEA = .07$, Female Sexual Aggression $R^2 = .02$, Male Sexual Aggression $R^2 = .07$. 
Figure 14. Actor-Partner Interdependence Model of inhibition subcomponent of executive dysfunction predicting sexual dating aggression within a structural equation modeling framework. Note. $+ p < .10$, $* p < .05$, $** p < .01$, $*** p < .001$. Standardized results are presented. Significant gender differences are represented by corresponding letters. Model Fit: $\chi^2 (2) = 2.93$, $p = .23$; $CFI = .90$; $RMSEA = .06$, Female Sexual Aggression $R^2 = .01$, Male Sexual Aggression $R^2 = .08$. 
**Aim 1.** As a review, Aim 1 of the current study examined the association between one’s own executive dysfunction and the frequency of one’s own use of dating aggression, with attention to the role of gender on this association.

**Aim 1a.** It was expected that there would be positive associations between one’s own executive dysfunction and the frequency of one’s own use of dating aggression within dating couples. For psychological aggression (Hypothesis I, see Figures 3-6), actor effects were not found across models. Specifically, results of an APIM revealed that females’ own executive dysfunction, as measured by perseverative errors of the WCST, was not associated with females’ own psychological aggression, \( \beta = .01, B = .01, SE = .09, p = .93, 95\% CI [-.22, .23] \). Similarly, males’ own executive dysfunction, as measured by the WCST, was not associated with males’ own psychological aggression, \( \beta = .03, B = .03, SE = .08, p = .74, 95\% CI [-.17, .22] \). Thus, Hypothesis Ia was not supported. Hypothesis Ib, which examined actor effects for shifting difficulties and psychological aggression, was not supported for females, \( \beta = .15, B = .15, SE = .10, p = .15, 95\% CI [-.11, .41] \), or males, \( \beta = -.01, B = -.01, SE = .08, p = .95, 95\% CI [-.22, .21] \). Neither females’ own, \( \beta = -.02, B = -.02, SE = .08, p = .82, 95\% CI [-.21, .18] \), nor males’ own, \( \beta = -.03, B = -.03, SE = .09, p = .70, 95\% CI [-.25, .19] \), executive dysfunction for updating was associated with their own outcomes of psychological aggression (Hypothesis Ic). The associations between females’, \( \beta = -.14, B = -.14, SE = .09, p = .11, 95\% CI [-.37, .09] \), and males’, \( \beta = -.03, B = -.03, SE = .08, p = .76, 95\% CI [-.24, .19] \), inhibition difficulties with their own outcomes of psychological aggression were not supported (Hypothesis Id). As noted above, findings for the WCST, shifting, and inhibition as associated with outcomes of psychological aggression should not be substantively interpreted or extrapolated due to poor model fit.
For physical aggression (Hypothesis II, see Figures 7-10), actor effects were confirmed only for inhibition difficulties and outcomes of physical aggression, though these results were confirmed across both females and males. First, neither females’ \( \beta = .12, B = .12, SE = .10, p = .25, 95\% \text{ CI } [-.15, .38] \), nor males’ \( \beta = -.04, B = -.04, SE = .04, p = .37, 95\% \text{ CI } [-.15, .07] \) WCST were associated with their own outcomes of physical aggression (Hypothesis IIa). Neither females’ shifting difficulties, \( \beta = .17, B = .17, SE = .11, p = .11, 95\% \text{ CI } [-.10, .45] \), nor males’ shifting difficulties, \( \beta = -.08, B = -.08, SE = .08, p = .32, 95\% \text{ CI } [-.28, .12] \) were associated with their own use of physical dating aggression (Hypothesis IIb). Neither females’ own, \( \beta = .11, B = .11, SE = .11, p = .28, 95\% \text{ CI } [-.16, .39] \), nor males own, \( \beta = -.02, B = -.02, SE = .11, p = .83, 95\% \text{ CI } [-.30, .25] \), updating difficulties were associated with their own outcomes of physical aggression (Hypothesis IIc). In contrast to hypothesized findings (Hypothesis IIId), females’ own difficulties with inhibition were associated with less frequent physical aggression, \( \beta = -.17, B = -.17, SE = .08, p = .04, 95\% \text{ CI } [-.37, .04] \). Similarly, males’ own inhibition difficulties demonstrated a trend, such that male’s own inhibition difficulties were associated with less physical aggression perpetration, \( \beta = -.13, B = -.13, SE = .08, p = .096, 95\% \text{ CI } [-.32, .07] \).

For sexual aggression (Hypothesis III, see Figures 11-14), actor effects were only confirmed for male shifting difficulties and males’ own outcomes of sexual aggression. Specifically, neither females’, \( \beta = .09, B = .09, SE = .10, p = .38, 95\% \text{ CI } [-.17, .34] \), nor males’, \( \beta = -.03, B = -.03, SE = .08, p = .70, 95\% \text{ CI } [-.23, .17] \) WCST was associated with outcomes of sexual aggression (Hypothesis IIIa). Females’ difficulties with shifting abilities were not significantly associated with females’ own outcomes of sexual aggression, \( \beta = .03, B = .03, SE = .13, p = .79, 95\% \text{ CI } [-.29, .36] \), though males’ shifting difficulties demonstrated a trend towards
a positive association with males’ sexual aggression perpetration, $\beta = .15, B = .15, SE = .08, p = .06, 95\% CI [-.05, .35]$, in turn supporting Hypothesis IIIb. Females’ own updating difficulties were not associated with female sexual aggression perpetration, $\beta = .14, B = .14, SE = .12, p = .25, 95\% CI [-.17, .45]$. Similarly, Hypothesis IIIc was not supported for males, $\beta = .05, B = .05, SE = .10, p = .60, 95\% CI [-.21, .31]$. Neither females’, $\beta = .00, B = .00, SE = .06, p = 1.00, 95\% CI [-.15, .15]$, nor males’, $\beta = -.10, B = -.10, SE = .07, p = .18, 95\% CI [-.28, .09]$, inhibition difficulties were associated with their own sexual aggression perpetration (Hypothesis IIIId).

**Aim 1b.** Aim 1b sought to compare the magnitude of the association between one’s own executive dysfunction and one’s own dating aggression for females and males. For psychological aggression (Hypothesis IV, see Figures 3-6), gender differences were not supported. This was such that the association between one’s own WCST performance and one’s own outcomes of psychological aggression did not differ for females and males $[\Delta \chi^2 (1) = .02, p = .89; \Delta CFI = .02]$, which does not support Hypothesis IVa. Females’ and males’ association among their shifting difficulties and their own outcomes of psychological aggression did not differ in magnitude $[\Delta \chi^2 (1) = 1.38, p = .24; \Delta CFI = .00]$. For Hypothesis IVc, gender differences were not supported for updating difficulties and psychological aggression $[\Delta \chi^2 (1) = .02, p = .89; \Delta CFI = .01]$. Hypothesis IVd, investigating gender differences in the association between inhibition and psychological aggression, was not supported $[\Delta \chi^2 (1) = 1.00, p = .32; \Delta CFI = -.01]$. Again, findings for WCST, shifting, and inhibition difficulties, as associated with outcomes of psychological aggression, are not substantively interpreted due to poor model fit.

For physical aggression (Hypothesis 5, see Figures 7-10), gender differences in actor effects were found only for indicators of shifting difficulties. Specifically, the association
between one’s own WCST performance and outcomes of physical aggression did not differ for females and males \([\Delta \chi^2 (1) = 2.69, p = .10; \Delta CFI = .00]\), in turn disconfirming Hypothesis Va. The results of adjusted chi-square difference tests confirmed that females’ \((\beta = .17, p = .11)\) and males’ \((\beta = -.08, p = .32)\) association among their shifting difficulties and their own outcomes of physical aggression differed in magnitude \([\Delta \chi^2 (1) = 7.39, p = .01; \Delta CFI = .00]\), supporting Hypothesis Vb. For Hypothesis Vc, gender differences were not supported for actor effects among updating difficulties and physical aggression \([\Delta \chi^2 (1) = 1.51, p = .22; \Delta CFI = .00]\). Hypothesis Vd, investigating gender differences in the association between inhibition and physical aggression, was not supported \([\Delta \chi^2 (1) = .12, p = .73; \Delta CFI = .00]\).

In terms of sexual aggression (Hypothesis VI, see Figures 11-14), gender differences were found only for the indicator of inhibition. Specifically, the association between males’ and females’ WCST performance and outcomes of sexual aggression did not differ \([\Delta \chi^2 (1) = .78, p = .38; \Delta CFI = .04]\), which does not support Hypothesis Va. Females’ and males’ did not differ in the magnitude of their association among their shifting difficulties and their own outcomes of sexual aggression \([\Delta \chi^2 (1) = .61, p = .43; \Delta CFI = .01]\), disconfirming Hypothesis VIb. For Hypothesis VIc, gender differences were not supported for updating difficulties and sexual aggression \([\Delta \chi^2 (1) = .30, p = .58; \Delta CFI = .10]\). Though adjusted chi-square difference tests did not suggest worsened model fit, CFI estimates suggested worsened model fit with the placement of constraints for gender differences in the association between inhibition and sexual aggression \([\Delta \chi^2 (1) = 1.31, p = .25; \Delta CFI = -.05]\). Thus, in support of Hypothesis Id, evidence is provided for gender difference for females \((\beta = .00, p = 1.00)\) and males \((\beta = -.10, p = .18)\) in their
association among inhibition difficulties and their own frequency of sexual aggression perpetration.

**Aim 2.** As described above, Aim 2 investigated the association between one’s own executive functioning difficulties and the frequency of one’s dating partner’s use of dating aggression, with attention to the role of gender on this association.

**Aim 2a.** It was expected that there would be positive associations between one’s own executive dysfunction and the frequency of one’s partner’s use of dating aggression within dating couples. For psychological aggression (Hypothesis VII, see Figures 3-6), results of APIMs revealed partner effects for males’ WCST performance and their partners’ frequency of psychological aggression perpetration, males’ updating difficulties and their partners’ frequency of psychological aggression perpetration, and females’ inhibition difficulties and their partners’ frequency of psychological aggression perpetration. However, as noted above, models of executive dysfunction utilizing indicators of the WCST, shifting difficulties, and inhibition difficulties showed poor model fit, and thus do not provide meaningful information that can be generalized to the larger population. Therefore, findings are reviewed below for informational purposes, though only the association for males’ updating difficulties and partner outcomes of psychological perpetration should be considered meaningful findings. Specifically, results of an APIM revealed that females’ executive dysfunction, as measured by perseverative errors of the WCST, was not associated with males’ psychological aggression perpetration, \( \beta = -.01, B = -.01, SE = .09, p = .95 \), 95% CI [-.24, .22]. While males’ executive dysfunction, as measured by the WCST, showed a trend toward association with females’ psychological aggression, \( \beta = .14, B = .14, SE = .07, p = .05 \), 95% CI [-.05, .33], these results cannot be considered to support
Hypothesis VIIa due to poor model fit. Females’ difficulties with shifting was not associated
with males’ outcomes of psychological aggression, $\beta = .04, B = .03, SE = .08, p = .67, 95\% CI [-.17, .24]$, nor was Hypothesis VIIb supported for males’ shifting difficulties and their partners’
outcomes of psychological aggression, $\beta = .01, B = .01, SE = .08, p = .90, 95\% CI [-.19, .21]$. Females’ updating difficulties were not associated with males’ psychological aggression, $\beta = .04, B = .04, SE = .08, p = .58, 95\% CI [-.16, .24]$. However, males’ updating difficulties
demonstrated a trend toward association with greater frequency of females’ psychological
aggression, $\beta = .19, B = .19, SE = .10, p = .05, 95\% CI [-.06, .44]$, in turn partially supporting
(Hypothesis VIIc). In contrast to expected findings, females’ inhibition difficulties were
associated with less frequent male psychological aggression, $\beta = -.19, B = -.18, SE = .07, p = .01,$
95% CI [-.35, -.01], though males’ inhibition difficulties were not significantly associated with
their female partners’ psychological aggression, $\beta = .10, B = .10, SE = .09, p = .24, 95\% CI [-.13,
.33]. As noted above, Hypothesis VIIId should not be considered to have been supported due to
poor model fit. As a review, only the association for males’ updating difficulties and partner
outcomes of psychological perpetration will be further interpreted.

In terms of physical aggression (Hypothesis VIII, see Figures 7-10), partner effects were
generally not supported across females or males. Specifically, neither female, $\beta = .04, B = .04,$
$SE = .05, p = .47, 95\% CI [-.10, .17]$, nor male, $\beta = -.08, B = -.08, SE = .07, p = .24, 95\% CI [-.26,
.10] partner effects were supported for APIMs examining WCST and partners’ outcomes of
physical aggression (Hypothesis VIIIa). Hypothesis, VIIIb, which examined partner effects for
shifting abilities, was not supported for females, $\beta = -.06, B = -.06, SE = .08, p = .46, 95\% CI [-.26,
.15], nor males, $\beta = -.04, B = -.04, SE = .06, p = .51, 95\% CI [-.19, .11]. Neither females’, $\beta$
= -.001, B = -.001, SE = .05, p = .98, 95% CI [-.12, .12], nor males’, β = .05, B = .05, SE = .12, p = .68, 95% CI [-.25, .35], updating difficulties were associated with their partners’ outcomes of physical aggression (Hypothesis VIIIic). In regard to Hypothesis VIIIId, neither females’ difficulties with inhibition, β = -.07, B = -.07, SE = .07, p = .32, 95% CI [-.24, .11], nor males’ inhibition difficulties, β = -.10, B = -.10, SE = .07, p = .15, 95% CI [-.28, .08], were associated with their partners’ physical aggression perpetration.

For sexual aggression (Hypothesis IX, see Figures 11-14), partner effects were again not supported across female and males. Females’ WCST performance was not significantly associated with males’ sexual aggression, β = -.03, B = -.03, SE = .08, p = .76, 95% CI [-.23, .18]. Similarly, Hypothesis IXa was not support for males, β = -.05, B = -.05, SE = .06, p = .37, 95% CI [-.20, .10]. In regard to Hypothesis IXb, neither females’, β = -.08, B = -.08, SE = .06, p = .22, 95% CI [-.24, .08], nor males’, β = -.04, B = -.04, SE = .07, p = .60, 95% CI [-.21, .14] shifting difficulties were associated with their partners’ sexual aggression perpetration.

Hypothesis IXc, investigating female and male partner effects for updating and sexual aggression, was not supported for females, β = -.11, B = -.10, SE = .07, p = .16, 95% CI [-.30, .09], or males, β = -.02, B = -.02, SE = .07, p = .73, 95% CI [-.19, .14]. Finally, partner effects were not supported for Hypothesis IXd. Specifically, neither females’, β = -.10, B = -.10, SE = .09, p = .23, 95% CI [-.33, .12], nor males’, β = .07, B = .07, SE = .10, p = .47, 95% CI [-.19, .33], inhibition difficulties were associated with their partners’ sexual aggression perpetration.

**Aim 2b.** Aim 2b sought to compare the magnitude of the association between one’s own executive dysfunction and one’s partner’s use of dating aggression for females and males. For psychological aggression (Hypothesis X, see Figures 3-6), gender differences were found for
males’ and females’ partner effect for the indicator of inhibition difficulties though these effects cannot be considered meaningful due to poor model fit. First, the association between one’s own WCST performance and one’s partner’s outcomes of psychological aggression did not differ between females and males \(\Delta \chi^2 (1) = 1.54, p = .21; \Delta CFI = -.01\), disconfirming Hypothesis Xa. Females’ and males’ association among their shifting difficulties and their partners’ outcomes of psychological aggression did not differ in magnitude \(\Delta \chi^2 (1) = .05, p = .82; \Delta CFI = .01\), in turn disconfirming Hypothesis Xb. For Hypothesis Xc, gender differences were not supported for updating difficulties and partner outcomes of psychological aggression \(\Delta \chi^2 (1) = 1.47, p = .23; \Delta CFI = -.01\). Gender differences in partner associations between inhibition and psychological aggression were found \(\Delta \chi^2 (1) = 7.52, p = .01; \Delta CFI = -.13\), such that females’ \(\beta = -.19, p = .01\) and males \(\beta = .10, p = .24\) differed in the magnitude of association among their own inhibition difficulties and their partner’s frequency of psychological aggression perpetration. However, as noted above, findings are limited due to poor model fit.

Next, for physical aggression (Hypothesis XI, see Figures 7-10), gender differences were not supported. Specifically, for Hypothesis XIa, the association between one’s own WCST performance and one’s partner’s physical aggression perpetration did not differ between females and males \(\Delta \chi^2 (1) = 2.01, p = .16; \Delta CFI = .00\). Hypothesis XIb was also not supported, in that females’ and males’ partner effects for shifting difficulties and their partners’ outcomes of physical aggression did not significantly differ \(\Delta \chi^2 (1) = .04, p = .84; \Delta CFI = .00\). For Hypothesis XIc, gender differences were also not supported for updating difficulties and partner outcomes of physical aggression \(\Delta \chi^2 (1) = .17, p = .68; \Delta CFI = .00\).
investigating gender differences in partner associations between inhibition and physical aggression, was not supported [Δχ² (1) = .10, p = .75; ΔCFI = .00].

Finally, for sexual aggression (Hypothesis XII, see Figures 11-14), the association between one’s own WCST performance and partner’s sexual aggression perpetration did not differ for females and males [Δχ² (1) = .08, p = .78; ΔCFI = .07], disconfirming Hypothesis XIIa. Similarly, for Hypothesis XIIb, females’ and males’ partner effects for shifting difficulties and their partners’ frequency of sexual aggression did not significantly differ [Δχ² (1) = .21, p = .64; ΔCFI = .01]. Gender differences were not observed for updating difficulties and partner outcomes of sexual aggression [Δχ² (1) = .63, p = .43; ΔCFI = .01], disconfirming Hypothesis XIIc. In support of Hypothesis XId, females (β = -.10, p = .23) and males (β = .07, p = .47) differed in their partner associations between inhibition and sexual aggression as indicated by CFI change [Δχ² (1) = 1.65, p = .20; ΔCFI = -.08]. Thus, significant gender differences in partner effects for sexual aggression were found only for inhibition difficulties.

**Baseline Model Fit for Study Aim 3.** Model fit for females was generally good to excellent across baseline SEMs. Specifically, the baseline SEM examining the association between female executive dysfunction, as measured by the WCST, and outcomes of aggression was good [χ² (2) = 3.51, p = .17; CFI = .97; RMSEA = .07] with female premorbid IQ [β = -.11, B = -.11, SE = .06, p = .045] and the intercorrelations for psychological and physical (r = .50, p < .001), physical and sexual (r = .18 p = .10), and sexual and psychological (r = .09, p = .34) aggression in the model. The baseline model for female shifting and outcomes of aggression also showed good model fit [χ² (2) = 4.10, p = .13; CFI = .95; RMSEA = .09] with female premorbid IQ [β = -.12, B = -.12, SE = .06, p = .04] and the intercorrelations for psychological and physical
(r = .48, p < .001), physical and sexual (r = .18, p = .13), and sexual and psychological (r = .09, p = .38) aggression in the model. Similarly, the baseline model fit for female updating and outcomes of aggression was good [$\chi^2 (2) = 4.33, p = .12; CFI = .96; RMSEA = .09$] with female premorbid IQ [\(\beta = -.08, B = -.08, SE = .05, p = .11\)] and the intercorrelations for psychological and physical (r = .51, p < .001), physical and sexual (r = .17, p = .11), and sexual and psychological (r = .10, p = .30) aggression in the model. Model fit was good for the baseline model of female inhibition and outcomes of aggression [$\chi^2 (2) = 4.194, p = .12; CFI = .96; RMSEA = .09$] with female premorbid IQ [\(\beta = -.13, B = -.13, SE = .06, p = .03\)] and the intercorrelations for psychological and physical (r = .49, p < .001), physical and sexual (r = .19, p = .08), and sexual and psychological (r = .09, p = .32) aggression in the model. Across models, 0-2% of the variance in female psychological aggression, 3-5% of the variance in female physical aggression, and 0-2% of the variance in female sexual aggression was accounted for (see Figures 15-18 and Table 9).
Figure 15. Structural equation model assessing the relative contribution of executive dysfunction, as measured by the WCST, to each subtype of dating aggression for females. Note. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Standardized results are presented. Significant pairwise comparisons between indicators of aggression are represented by corresponding letters. Model Fit: $\chi^2 (2) = 3.51, p = .17$; $CFI = .97$; $RMSEA = .07$, Female Psychological Aggression $R^2 = .001$, Female Physical Aggression $R^2 = .03$, Female Sexual Aggression $R^2 = .01$. 
Figure 16. Structural equation model assessing the relative contribution of the shifting subcomponent of executive dysfunction to each subtype of dating aggression for females. Note. + p < .10, * p < .05, ** p < .01, *** p < .001. Standardized results are presented. Significant pairwise comparisons between indicators of aggression are represented by corresponding letters. Model Fit: $\chi^2(2) = 4.10, p = .13; CFI = .95; \text{RMSEA} = .09$, Female Psychological Aggression $R^2 = .02$, Female Physical Aggression $R^2 = .05$, Female Sexual Aggression $R^2 = .001$. 

Female Executive Dysfunction (Shifting) -> Female Psychological Dating Aggression
Female Executive Dysfunction (Shifting) -> Female Physical Dating Aggression
Female Executive Dysfunction (Shifting) -> Female Sexual Dating Aggression
Female Premorbid IQ

.15
.18*
.04
.48***
.18
.09
Figure 17. Structural equation model assessing the relative contribution of the updating subcomponent of executive dysfunction to each subtype of dating aggression for females. Note. $+ p < .10$, $* p < .05$, $** p < .01$, $*** p < .001$. Standardized results are presented. Significant pairwise comparisons between indicators of aggression are represented by corresponding letters. Model Fit: $\chi^2 (2) = 4.33, p = .12$; $CFI = .96$; $RMSEA = .09$, Female Psychological Aggression $R^2 = .001$, Female Physical Aggression $R^2 = .03$, Female Sexual Aggression $R^2 = .02$. 
Figure 18. Structural equation model assessing the relative contribution of the inhibition subcomponent of executive dysfunction to each subtype of dating aggression for females. Note. + p < .10, * p < .05, ** p < .01, *** p < .001. Standardized results are presented. Significant pairwise comparisons between indicators of aggression are represented by corresponding letters. Model Fit: $\chi^2 (2) = 4.19, p = .12; CFI = .96; RMSEA = .09$, Female Psychological Aggression $R^2 = .02$, Female Physical Aggression $R^2 = .04$, Female Sexual Aggression $R^2 = .00$. 
Table 9

Summary Results from SEM Models Examining the Relative Contribution of Indicators of Executive Dysfunction to Outcomes of Dating Aggression for Females (n = 138)

<table>
<thead>
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<th>Indicator</th>
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<th>B</th>
<th>SE(B)</th>
<th>95% CI(B)</th>
<th>p</th>
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<td>.04</td>
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<tr>
<td>F_Sex_Agg</td>
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<td>.08</td>
<td>.10</td>
<td>-.17, .32</td>
<td>.43</td>
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</tr>
<tr>
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<td>.15</td>
<td>.10</td>
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<tr>
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<td>.18</td>
<td>.11</td>
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<td>.04</td>
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<td>-.22, .18</td>
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<td>.01</td>
<td>.06</td>
<td>-.14, .15</td>
<td>.90</td>
</tr>
</tbody>
</table>

*F = Female, Psych = Psychological, Phys = Physical, Sex = Sexual, Agg = Aggression*
For males, models showed excellent fit. The baseline model examining the association among male performance on the WCST and outcomes of aggression was excellent [$\chi^2 (3) = 1.04, p = .79; CFI = 1.00; RMSEA = .00$] with controls for male intelligence on male sexual aggression [$\beta = -.16, B = -.16 SE = .10, p = .11$], male satisfaction on psychological aggression [$\beta = -.38, B = -.38, SE = .08, p < .001$], and male satisfaction on sexual aggression [$\beta = -.17, B = -.16, SE = .09, p = .06$], as well as the intercorrelations for psychological and physical ($r = .25, p = .01$), physical and sexual ($r = .26, p < .001$), and sexual and psychological ($r = .30, p = .001$) aggression in the model. The baseline model for male shifting and outcomes of aggression also showed excellent model fit [$\chi^2 (3) = 1.05, p = .79; CFI = 1.00; RMSEA = .00$] with controls for male intelligence on male sexual aggression [$\beta = -.15, B = -.15 SE = .09, p = .11$], male satisfaction on psychological aggression [$\beta = -.39, B = -.38, SE = .08, p < .001$], and male satisfaction on sexual aggression [$\beta = -.14, B = -.14, SE = .08, p = .07$], as well as the intercorrelations for psychological and physical ($r = .24, p = .01$), physical and sexual ($r = .28, p < .001$), and sexual and psychological ($r = .30, p = .001$) aggression in the model. Similarly, the baseline model fit for female updating and outcomes of aggression was excellent [$\chi^2 (3) = 1.84, p = .61; CFI = 1.00; RMSEA = .00$] with controls for male intelligence on male sexual aggression [$\beta = -.12, B = -.12 SE = .11, p = .25$], male satisfaction on psychological aggression [$\beta = -.40, B = -.40, SE = .08, p < .001$], and male satisfaction on sexual aggression [$\beta = -.15, B = -.15, SE = .09, p = .08$], as well as the intercorrelations for psychological and physical ($r = .24, p = .02$), physical and sexual ($r = .27, p < .001$), and sexual and psychological ($r = .30, p = .001$) aggression in the model. Model fit was excellent for the baseline model of male inhibition and
outcomes of aggression [$\chi^2 (3) = 1.15, p = .77; CFI = 1.00; RMSEA = .00$] with controls for male intelligence on male sexual aggression [$\beta = -.16, B = -.15 SE = .09, p = .099$], male satisfaction on psychological aggression [$\beta = -.39, B = -.38, SE = .08, p < .001$], and male satisfaction on sexual aggression [$\beta = -.17, B = -.17, SE = .09, p = .047$], as well as the intercorrelations for psychological and physical ($r = .24, p = .01$), physical and sexual ($r = .25, p < .001$), and sexual and psychological ($r = .29, p = .001$) aggression in the model. Across models, the models accounted for 15% of the variance in male psychological aggression, 0-2% of the variance in male physical aggression, and 6-8% of the variance in male sexual aggression (see Figures 19-22 and Table 10).
Figure 19. Structural equation model assessing the relative contribution of executive dysfunction, as measured by the WCST, to each subtype of dating aggression for males. Note. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Standardized results are presented. Significant pairwise comparisons between indicators of aggression are represented by corresponding letters. Model Fit: $\chi^2 (3) = 1.04, p = .79$; $CFI = 1.00$; $RMSEA = .00$, Male Psychological Aggression $R^2 = .15$, Male Physical Aggression $R^2 = .001$, Male Sexual Aggression $R^2 = .06$. 
Figure 20. Structural equation model assessing the relative contribution of the shifting subcomponent of executive dysfunction to each subtype of dating aggression for males. Note. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Standardized results are presented. Significant pairwise comparisons between indicators of aggression are represented by corresponding letters. Model Fit: $\chi^2 (3) = 1.05$, $p = .79$; $CFI = 1.00$; $RMSEA = .00$, Male Psychological Aggression $R^2 = .15$, Male Physical Aggression $R^2 = .01$, Male Sexual Aggression $R^2 = .08$. 
Figure 21. Structural equation model assessing the relative contribution of the updating subcomponent of executive dysfunction to each subtype of dating aggression for males. Note. + p < .10, * p < .05, ** p < .01, *** p < .001. Standardized results are presented. Significant pairwise comparisons between indicators of aggression are represented by corresponding letters. Model Fit: $\chi^2(3) = 1.84, p = .61; CFI = 1.00; RMSEA = .00$, Male Psychological Aggression $R^2 = .15$, Male Physical Aggression $R^2 = .001$, Male Sexual Aggression $R^2 = .06$. 
Figure 22. Structural equation model assessing the relative contribution of the inhibition subcomponent of executive dysfunction to each subtype of dating aggression for males. Note. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Standardized results are presented. Significant pairwise comparisons between indicators of aggression are represented by corresponding letters. Model Fit: $\chi^2 (3) = 1.15, p = .77$; $CFI = 1.00$; $RMSEA = .00$, Male Psychological Aggression $R^2 = .15$, Male Physical Aggression $R^2 = .02$, Male Sexual Aggression $R^2 = .07$. 
Table 10

Summary Results from SEM Models Examining the Relative Contribution of Indicators of Executive Dysfunction to Outcomes of Dating Aggression for Males (n = 138)

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<th>SE(B)</th>
<th>95% CI(B)</th>
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<td>-.03</td>
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M = Male, Psych = Psychological, Phys = Physical, Sex = Sexual, Agg = Aggression
**Aim 3.** To review, Aim 3 sought to clarify the relative contribution of executive dysfunction to subtypes of dating aggression among females and males.

**Aim 3a.** Aim 3a focused on investigating whether the expected positive associations among females’ executive dysfunction and outcomes of dating aggression perpetration were stronger among any of the subtypes of aggression (i.e., psychological, physical, or sexual dating aggression).

For Hypothesis XIII, indicators of executive dysfunction (i.e., WCST, shifting, inhibition, updating) were compared in their magnitude of association with psychological and physical aggression for females. Results revealed support for differences in the magnitude of association between outcomes of psychological and physical aggression only for the indicator of updating for females. In regard to Hypothesis XIIIa, the WCST did not show differential association with psychological ($\beta = .04, p = .67$) and physical ($\beta = .10, p = .29$) aggression for females [$\Delta \chi^2 (1) = .62, p = .43; \Delta CFI = .02$]. Similarly, for Hypothesis XIIIb, shifting difficulties did not differ in magnitude of association with psychological ($\beta = .15, p = .14$) and physical ($\beta = .18, p = .099$) aggression for females [$\Delta \chi^2 (1) = .16, p = .69; \Delta CFI = .03$]. Hypothesis XIIIc was supported in that females’ updating difficulties significantly differed in magnitude of association between psychological ($\beta = -.02, p = .77$) and physical ($\beta = .13, p = .23$) aggression [$\Delta \chi^2 (1) = 3.77, p = .05; \Delta CFI = -.05$]. Hypothesis XIIIId was not supported, in that females’ psychological ($\beta = -.13, p = .13$) and physical ($\beta = -.17, p = .04$) aggression did not significantly differ in magnitude for inhibition difficulties [$\Delta \chi^2 (1) = .24, p = .62; \Delta CFI = .03$].

For Hypothesis XIV, indicators of executive dysfunction were compared in their magnitude of association with physical and sexual aggression for females. In regard to
Hypothesis XIVa, the WCST did not show differential association with physical ($\beta = .10, p = .29$) and sexual ($\beta = .08, p = .43$) aggression for females $[\Delta \chi^2(1) = .06, p = .81; \Delta CFI = .03]$. Similarly, for Hypothesis XIVb, shifting difficulties did not differ in magnitude of association with physical ($\beta = .18, p = .099$) and sexual ($\beta = .04, p = .77$) aggression for females $[\Delta \chi^2(1) = .66, p = .42; \Delta CFI = .04]$. Hypothesis XIVc was not supported, in that the association among females’ updating difficulties did not differ in magnitude between physical ($\beta = .13, p = .23$) and sexual ($\beta = .14, p = .25$) aggression $[\Delta \chi^2(1) = .01, p = .92; \Delta CFI = .05]$. However, Hypothesis XIIIId was supported, in that females’ physical ($\beta = -.17, p = .04$) and sexual ($\beta = .01, p = .90$) aggression significantly differed in magnitude for inhibition difficulties $[\Delta \chi^2(1) = 5.23, p = .02; \Delta CFI = -.06]$. Together, support for differences in the magnitude of association between outcomes of physical and sexual aggression was found only for the indicator of inhibition for females.

Hypothesis XV was not supported. This was such that, across indicators of executive dysfunction, support was not found for differences in the magnitude of association between psychological and sexual aggression for females. For Hypothesis XVa, the WCST did not show differential association with psychological ($\beta = .04, p = .67$) and sexual ($\beta = .08, p = .43$) aggression for females $[\Delta \chi^2(1) = .14, p = .71; \Delta CFI = .02]$. Again, for Hypothesis XVB, shifting difficulties did not differ in magnitude of association with psychological ($\beta = .15, p = .14$) and sexual ($\beta = .04, p = .77$) aggression $[\Delta \chi^2(1) = .39, p = .53; \Delta CFI = .05]$. Hypothesis XVc was not supported, in that females’ updating difficulties did not differ significantly between psychological ($\beta = -.02, p = .77$) and sexual ($\beta = .14, p = .25$) aggression $[\Delta \chi^2(1) = 1.78, p = .18; \Delta CFI = -.01]$. Finally, Hypothesis XVd was not supported, in that females’ psychological ($\beta = -$
.13, $p = .13$) and sexual ($\beta = .01, p = .90$) aggression did not significantly differ in magnitude for inhibition difficulties [$\Delta \chi^2 (1) = 1.87, p = .17; \Delta CFI = -.01$].

**Aim 3b.** Aim 3b explored whether the associations among males’ executive dysfunction and outcomes of dating aggression perpetration were stronger among any of the subtypes of dating aggression (i.e., psychological, physical, or sexual subtypes of dating aggression).

For Hypothesis XVI, indicators of executive dysfunction (i.e., WCST, shifting, inhibition, updating) were compared in their magnitude of association with psychological and physical aggression for males. Hypothesis XVI was not supported, in that males did not differ in the relative contribution of executive dysfunction to psychological and physical aggression across indicators of executive dysfunction. Specifically, for Hypothesis XVIa, the WCST did not show differential association with psychological ($\beta = .02, p = .76$) and physical ($\beta = -.03, p = .47$) aggression for males [$\Delta \chi^2 (1) = .51, p = .47; \Delta CFI = .00$]. For Hypothesis XVIb, shifting difficulties did not differ in magnitude of association with psychological ($\beta = -.02, p = .84$) and physical ($\beta = -.08, p = .32$) aggression for males [$\Delta \chi^2 (1) = .49, p = .48; \Delta CFI = .00$]. Hypothesis XVIc was also not supported, as males’ updating difficulties did not differ in magnitude of association between psychological ($\beta = -.06, p = .48$) and physical ($\beta = -.02, p = .83$) aggression [$\Delta \chi^2 (1) = .08, p = .78; \Delta CFI = .00$]. Similarly, Hypothesis XIIIId was not supported, in that males’ psychological ($\beta = -.05, p = .58$) and physical ($\beta = -.13, p = .10$) aggression did not significantly differ in magnitude for inhibition difficulties [$\Delta \chi^2 (1) = 1.07, p = .30; \Delta CFI = .00$].

For Hypothesis XVII, indicators of executive dysfunction were compared in their magnitude of association with physical and sexual aggression for males. Results revealed support for differences in the magnitude of association of executive dysfunction with physical and sexual
aggression only for shifting difficulties. Specifically, for Hypothesis XVIIa, the WCST did not show differential association with physical ($\beta = -.03, p = .47$) and sexual ($\beta = -.03, p = .69$) aggression for males [$\Delta \chi^2 (1) = .001, p = .98; \Delta CFI = .00$]. For Hypothesis XVIIb, shifting difficulties significantly differed in magnitude of association with physical ($\beta = -.08, p = .32$) and sexual ($\beta = .16, p = .05$) aggression for males [$\Delta \chi^2 (1) = 10.36, p = .001; \Delta CFI = -.04$]. Hypothesis XVIIc was not supported, in that the association among males’ updating difficulties did not differ in magnitude for physical ($\beta = -.02, p = .83$) and sexual ($\beta = .06, p = .57$) aggression [$\Delta \chi^2 (1) = .43, p = .51; \Delta CFI = .00$]. Hypothesis XVIIId was also not supported, in that males’ physical ($\beta = -.13, p = .10$) and sexual ($\beta = -.11, p = .15$) aggression did not differ in magnitude for inhibition difficulties [$\Delta \chi^2 (1) = .12, p = .73; \Delta CFI = .00$].

Hypothesis XVIII, comparing the magnitude of association between executive dysfunction and outcomes of psychological and sexual aggression, was supported only for the indicator of shifting difficulties for males. Specifically, for Hypothesis XVIIIa, the WCST did not show differential association with psychological ($\beta = .02, p = .76$) and sexual ($\beta = -.03, p = .69$) aggression for males [$\Delta \chi^2 (1) = .31, p = .58; \Delta CFI = .00$]. For Hypothesis XVIIIb, shifting difficulties significantly differed in magnitude of association with psychological ($\beta = -.02, p = .84$) and sexual ($\beta = .16, p = .05$) aggression for males [$\Delta \chi^2 (1) = 4.77, p = .03; \Delta CFI = .00$]. Hypothesis XVIIIc was not supported, in that males’ updating difficulties did not differ significantly between psychological ($\beta = -.06, p = .48$) and sexual ($\beta = .06, p = .57$) aggression [$\Delta \chi^2 (1) = 1.04, p = .31; \Delta CFI = .00$]. Finally, Hypothesis XVIIIId was not supported, in that males’ psychological ($\beta = -.05, p = .58$) and sexual ($\beta = -.11, p = .15$) aggression did not significantly differ in magnitude for inhibition difficulties [$\Delta \chi^2 (1) = .43, p = .51; \Delta CFI = .00$].
DISCUSSION

The current study had 3 main objectives aimed at clarifying the contribution of executive dysfunction to dating aggression within a dyadic framework: 1) to investigate the associations among one’s own executive dysfunction and outcomes of dating aggression, as well as the impact of gender on these associations, 2) to investigate the associations among one’s own executive dysfunction and one’s partner’s use of dating aggression perpetration, as well as the impact of gender on these associations, and 3) to investigate the relative contribution of executive dysfunction to subtypes of dating aggression for females and males. Regarding Aim 1, results revealed some support for the association among one’s own executive dysfunction and outcomes of aggression, though effects were limited to physical and sexual aggression. Specifically, the model of inhibition difficulties in association with physical aggression revealed that both females and males showed negative associations among one’s own executive dysfunction and one’s own frequency of physical aggression perpetration. For the model of shifting difficulties and sexual aggression, the model showed that only males’ own executive dysfunction was positively associated with males’ own sexual aggression perpetration. Gender differences were found in the magnitude of association between executive dysfunction and dating aggression in models of shifting and inhibition difficulties, though the meaningfulness of these differences is limited given the generally nonsignificant findings of these models (i.e. significant differences between two non-significant parameter estimates). For Aim 2, evidence for the contribution of one’s own executive dysfunction to one’s partner’s use of dating aggression...
aggression was limited to psychological aggression, though these effects were limited to partner effects for males (i.e., males’ updating difficulties contributed to female psychological aggression). Significant gender differences were found in the magnitude of partner effects for models of inhibition, though nonsignificant associations in this model limit the meaningfulness of these gender differences. In regard to Aim 3, evidence was found for stronger magnitude of associations between executive dysfunction and specific subtypes of aggression, though again findings were influenced by indicator of executive dysfunction and gender. Where significant differences were observed for females, females’ executive dysfunction was more strongly associated with physical aggression than psychological or sexual aggression. Where significant differences were observed for males, males’ executive dysfunction more strongly predicted sexual aggression as compared to psychological and physical aggression. Taken together, then, I found evidence for the impact of executive dysfunction within late adolescent and young adult dating couples, such that one’s own executive dysfunction is negatively associated with both males’ and females’ own frequency of physical aggression perpetration, males’ own executive dysfunction is positively associated with males’ own frequency of sexual aggression perpetration, males’ executive dysfunction increases the frequency of females’ perpetration of psychological aggression, and executive dysfunction contributes more strongly to female outcomes of physical aggression and male outcomes of sexual aggression among subtypes of aggression perpetration. Specific findings will be further discussed below for each study aim.

Aim 1

Aim 1a. The central focus of Aim 1a of the current study was to examine the association between each partner’s own executive dysfunction as it contributes to each partner’s own use of
dating aggression. Results revealed some support for the association between one’s own executive dysfunction and outcomes of physical aggression for females and males, though these findings were limited to indicators of inhibition difficulties. The associations among inhibition difficulties and physical aggression were not as predicted, in that less inhibition difficulties contributed to more physical aggression perpetration for females and males. Note, this association was a significant negative association for males and a trend toward a negative association for females. In addition, males’ own executive dysfunction contributed to greater frequency of sexual dating aggression, though these findings were marginally significant and limited to indicators of shifting difficulties.

In regard to the association among inhibition difficulties and physical aggression, the current findings are inconsistent with previous marital and dating aggression literature. Specifically, several of the previously discussed studies used indicators of inhibition, such as the Stroop Task, with findings generally supporting the association between greater inhibition difficulties contributing to greater marital aggression (i.e., Cohen et al., 2003; Teichner et al., 2001; Schafer & Fals-Stewart, 1997; Schafer et al., 1994; Stein et al., 2002, Finkel et al., 2002, for exception see Westby & Ferraro, 1999). These findings have been supported for male perpetration, mutually occurring psychological and physical aggression in marital relationships, female victims of marital aggression, and across female and male members of dating couples (e.g., Cohen et al., 2003; Teichner et al., 2001; Schafer & Fals-Stewart, 1997; Schafer et al., 1994; Stein et al., 2002; Fennema-Notestine et al., 2002; Finkel et al., 2002). Therefore, the current findings demonstrating negative associations between inhibition difficulties and
frequency of physical aggression perpetration for females and males are a significant departure from prior works.

The negative association between inhibition difficulties and frequency of physical aggression perpetration can be stated as less inhibition difficulties contribute to greater frequency of aggression perpetration for females and males, or alternatively stated as greater inhibition difficulties contribute to less frequent aggression perpetration for females and males. If we consider inhibition difficulties to be related to poor self-control or self-regulation failure (see Beaver et al, 2007), these findings significantly depart from literature suggesting that self-control and self-regulation are protective from dating aggression within dating dyads (Finkel et al., 2009; Vohs et al., 2011; van Dulmen et al, 2012). While general methodological and measurement reasons for these findings are probable, conceptual explanations will be provided first (Note, methodological/measurement concerns are discussed further in the ‘General Discussion’ section below.). A possible conceptual explanation for the finding that less inhibition difficulties contribute to greater physical aggression perpetration may be that physical aggression is more intentional than anticipated. Specifically, it may be that physical aggression is at least in part a purposeful and coercive strategy, rather than a strategy that reflects a lack of ability to inhibit aggressive tendencies. For example, both males and females use physical aggression as a coercive strategy in romantic relationships (e.g., Dutton & Goodman, 2005; Graham-Kevan & Archer, 2005; Ronfeldt, Kimerling, & Arias, 1998). In addition, though, it may be that conceptualizing the use of physical aggression as a failure of inhibition abilities may be short-sighted in light of literature suggesting that the use of physical aggression can be a reaction to a partner’s aggression or otherwise a form of self-preservation and protection (Graham-Kevan &
Archer, 2005; Muñoz-Rivas et al., 2007) and tends to be a reciprocal strategy (Graham-Kevan & Archer, 2005; Capaldi & Crosby, 1997; Fergusson et al., 2005; Gray & Foshee, 1997; Jennings et al., 2012; Whitaker et al. 2007). However, because female and male physical aggression was not correlated in the current sample, taken alongside a lack of interactive partner effects for physical aggression (see Aim 2a), my findings tend to favor an interpretation of physical aggression as a coercive strategy in dating relationships. Further, these effects did not differ by gender (see Aim 1b), suggesting that these findings generally apply to both females and males.

Alternatively, it is possible that individuals with inhibition difficulties are actively compensating for inhibition difficulties, in turn contributing to decreased aggression. Here, the measurement of inhibition becomes directly relevant. Scholars have argued that inhibition abilities are widely measured and may not tap uniform constructs across measurement (e.g., Friedman & Miyake, 2004; Nigg, 2000; Collette, Hogge, & Salmon, van der Linden, 2006). This is notable because the Go/No-Go task was substituted into Miyake and colleagues’ (2000) definition of inhibition. While this is justified by past literature (e.g., Harvey et al., 2004; Casey et al., 1997; Kiefer et al., 1998; Rubia et al., 2001), this measure has not been used in prior marital or dating aggression literature. In addition, Garavan, Ross, Murphy, Roche, and Stein (2006) have demonstrated that separate processes are involved in response inhibition, commission errors, and behavioral correction using a modified version of the Go/No-Go task. Thus, it may be that the Go/No-Go task, as used in this study, is not tapping aspects of executive dysfunction as anticipated, and thus failing to capture full inhibitory processes. In this case, it may be that deliberate self-correction may be operating at a level that has been missed through
the current means of measurement. This measurement concern will be further discussed in the ‘Limitations & Future Directions’ section below.

In regard to the positive trend between male shifting difficulties and male perpetration of sexual aggression, this finding is largely consistent with the general and marital aggression literature. Specifically, Hancock et al. (2010) have demonstrated that executive dysfunction, including inhibition and shifting difficulties, is found among males incarcerated due to general aggression perpetration and sexual assault. While none of the dating or marital aggression literature specifically investigated the association between executive dysfunction and sexual aggression perpetration, these studies did not preclude those who had perpetrated sexual aggression. The current findings, then, demonstrate that executive dysfunction, as measured by shifting difficulties, is associated with sexual aggression perpetration for males in a young adult dating sample.

In addition, it is also relevant to discuss findings that were not significant across models. First, it is notable that psychological aggression showed poor model fit across models, with the exception of the model examining psychological aggression as associated with updating difficulties. This model did not reveal significant associations for females’ or males’ executive dysfunction and psychological aggression. While updating difficulties have not specifically been examined as they relate to psychological aggression, as per Miyake and colleagues (2000) conceptualization, male executive dysfunction has been found to predict common couple psychological aggression in marital aggression literature (Schafer et al., 1994) when indicators of shifting difficulties are used (e.g., Trail Making Test). In addition, it is notable that Finkel and colleagues (2012) demonstrated an association between inhibition difficulties on the Stroop and
an analog measure of aggression in dating samples (i.e., voodoo doll task) that is correlated with psychological and physical aggression perpetration. Taken together, the lack of association between executive dysfunction and psychological aggression across indicators of executive dysfunction was not expected, given that shifting, updating, and inhibition difficulties are generally correlated (Miyake et al., 2000). Therefore, these findings do not support the association among executive dysfunction and outcomes of psychological dating aggression in a young adult sample. Thus, these findings are consistent with the work of Walling et al. (2012), who also failed to find an association between executive dysfunction and marital, psychological aggression for males.

Next, only inhibition difficulties were associated with female and male physical aggression perpetration. This is a significant departure from existing literature, which suggests that male shifting (e.g., WCST, Trail Making Test) and updating (e.g., Digit Symbol) difficulties are associated with physical aggression perpetration for men and common couple aggression (e.g., Schafer et al., 1994). Again, because subcomponents of executive dysfunction are expected to be correlated, the lack of significant findings in the current study were not expected. While methodological and measurement discrepancies may partially explain findings (again, these considerations are reviewed in the ‘General Discussion’ section below), the general findings of the current study do not provide support the applicability of prior marital or dating aggression literature when investigated in a normative dating sample using self-reports of committed acts of aggression. Therefore, as discussed above, it is likely that physical aggression in dating aggression may not necessarily reflect a lapse in executive functions.
Finally, in regard to sexual aggression, females’ executive dysfunction was not significantly associated with female sexual aggression perpetration across any of the models, in turn suggesting that the association between executive dysfunction and sexual aggression perpetration is limited to males as measured by indicators of shifting difficulties. These findings are surprising in light of the correlation among male and female sexual aggression perpetration in the current study and within the broader dating aggression literature. Given that gender differences in the association among females’ and males’ own shifting difficulties and their own sexual aggression were not found (further discussed below), however, the significance of these gender differences are likely not robust. Generally, however, findings from the current study do not support an association between females’ executive dysfunction and outcomes of sexual dating aggression. Moreover, in a departure from prior literature (Hancock et al., 2010), males’ own executive dysfunction, as measured by shifting difficulties, was associated only with males’ own sexual aggression perpetration in this sample of young, adult males. These findings are surprising in light of literature suggesting that shifting, updating, and inhibition difficulties tend to be correlated.

In summary, the current findings indicate that one’s ability to inhibit responses is associated with increased frequency of physical dating aggression perpetration for females and males. For males, one’s difficulty shifting is associated with increased likelihood for sexual aggression perpetration.

**Aim 1b.** Gender differences in the magnitude of association between females and males executive dysfunction and outcomes of aggression were investigated in Aim 1b. This aim was generally exploratory given the lack of available literature on gender differences in marital or
dating aggression literature. Results revealed significant gender differences in the magnitude of
association between one’s own shifting difficulties and one’s own physical aggression
perpetration. Note that while neither female nor male associations reached significance, females
tended to show a positive association while males tended to show a negative association among
shifting difficulties and physical aggression perpetration. In addition, significant gender
differences were found among one’s own inhibition difficulties and one’s own sexual aggression
perpetration. This was such that females showed no association, while males showed a
nonsignificant negative association between inhibition difficulties and sexual aggression
perpetration. Due to the nonsignificant associations within these models, the meaningfulness of
these gender differences is questionable.

First, to discuss significant findings, it is generally noteworthy that association among
one’s own shifting and one’s own physical aggression, as well as one’s own inhibition and one’s
own sexual aggression, revealed a pattern suggesting that gender differences may be due to
negative associations between executive dysfunction and dating aggression that is specific to
males. Specifically, where gender differences were found, females showed non-significant
positive association whereas males showed non-significant negative associations. These findings
may provide evidence that male aggression reflects a coercive strategy, self-corrective strategy,
or difficulties with the measurement of inhibition, as discussed above. Specifically, the current
findings indicate that, at least for physical and sexual aggression, males tended to display a
tendency for less executive dysfunction to be associated with greater dating aggression
perpetration. Stated another way, male physical and sexual aggression, as measured by indicators
of shifting and inhibition difficulties respectively, differed from females and suggested that
executive dysfunction was associated with less aggression perpetration. However, it is important to temper this discussion with the recognition that the paths in these models did not reach significance, calling into question the meaningfulness of gender differences.

Next, to discuss non-significant findings, it is notable that females and males did not show differences in the relative magnitude of their association between indicators of executive dysfunction and psychological aggression. In addition, males and females did not show significant differences in terms of the aforementioned significant associations among inhibition difficulties and physical aggression for females and males, nor male shifting difficulties and male outcomes of sexual aggression perpetration (see Aim 1a). Thus, significant associations between one’s own executive dysfunction and one’s own outcomes of dating aggression found in the current study (i.e., associations among female and male inhibition difficulties and outcomes of physical aggression, as well as male shifting difficulties and male sexual aggression) were largely similar for females and males. In addition, females and males did not show significant gender differences across remaining indicators of executive dysfunction (i.e., WCST, updating, inhibition) and physical aggression, nor remaining indicators of executive dysfunction (i.e., WCST, shifting, updating) and sexual aggression.

In summary, the current findings related to gender differences in the association between one’s own executive dysfunction and outcomes of dating aggression were novel and exploratory in nature as prior literature has not examined gender differences. The general pattern of findings are both anticipated and divergent from what might be expected based on clues provided in past general, marital, and dating aggression literature. Specifically, borrowing from the general aggression literature, Nigg and Pollock-Huang (2003) have proposed that executive functions
may be more strongly implicated in female aggression, though research tends to be varied. Dating aggression literature tends to suggest that risk factors for dating aggression tend to be similar between females and males (Magdol et al., 1998). Yet, problem-solving abilities have been found to be negatively associated with both female and male dating aggression (e.g., Hammock & O’Hearn, 2002), though exceptions have been noted (e.g., Riggs et al., 1990; Luthra, & Gidycz, 2006). In terms of executive dysfunction, specifically, preliminary investigations of executive dysfunction and dating aggression have revealed that inhibition difficulties of females and males are associated with dating aggression (Finkel et al., 2012). Thus, the finding that females and males did not differ in the magnitude of association between inhibition and physical dating aggression is consistent with what might be expected based on Finkel and colleagues work. Yet, the current findings also suggest that gender differences can be observed when executive dysfunction is measured using indicators of shifting and inhibition and when examined across physical and sexual dating aggression. Though these associations did not reach significance, a case can be made for the utility of measuring executive dysfunction and dating aggression broadly when examining gender differences in order to have the ability to detect gender differences. Generally, however, findings suggest greater similarity than differences among female and male associations between executive dysfunction and dating aggression outcomes.

**Aim 2**

**Aim 2a.** The focus of Aim 2a was to examine the association between each partner’s own executive dysfunction as it contributes to one’s partner’s use of dating aggression as guided by the DDS model of dating aggression (e.g., Capaldi et al., 2005). This aim was exploratory in
nature, given that the interactive effects of executive dysfunction on outcome of dating aggression among couples have not been directly examined in the marital or dating aggression literature. The current study revealed partner effects only for psychological aggression, such that males’ updating difficulties showed a positive trend in association with their female partners’ use of psychological dating aggression. Partner effects were not supported across models of physical or sexual dating aggression.

The finding that male updating difficulties are associated with females’ outcomes of psychological aggression is consistent with literature suggesting that males’ executive dysfunction increased risk for mutually occurring psychological marital aggression (Schafer et al., 1994). However, it is also notable that indicators of shifting were used in this study (i.e., TMT). Therefore, the finding is also novel and extends the current literature. While males’ performance on the WCST, which can also be considered a measure of shifting difficulties, was associated with females’ outcomes of psychological aggression, poor model fit prevents further interpretation of these findings. Together, however, the current results are consistent with prior marital aggression literature, and suggest that male executive dysfunction is associated with female psychological aggression. Thus, males’ difficulties with updating may serve as a frustration to female partners, in turn increasing females’ likelihood to aggress against her romantic partner. Note, gender differences were not significant in this association (see Aim 2b), thus the specificity of this finding to males is not clear.

Again, nonsignificant findings are briefly reviewed. Given that this is the first exploration of the impact of one’s own executive dysfunction and one’s partner’s dating aggression perpetration, it is notable that partner effects were not found for physical or sexual dating aggression.
aggression. While caution is warranted given that the null hypothesis cannot be proven and the current nonsignificant findings may be related to methodological and measurement differences from past studies (see below for further discussion), it is notable that the current nonsignificant findings depart from the interactive effects of partner characteristics anticipated by the DDS model. Further, these findings diverge from marital aggression research that has demonstrated that male executive dysfunction is associated with mutually occurring physical aggression (i.e., Schafer & Fals-Stewart, 1997; Schafer et al., 1994) when indicators of shifting and inhibition are utilized (e.g., Trail Making Test, Stroop Task). Moreover, because female victims of psychological, physical, and sexual aggression also display executive dysfunction, including inhibition and shifting difficulties, it was expected that partner characteristics may place individuals at risk for aggression. Yet, the current findings only found support for interactive effects that are specific to psychological aggression. Taken together, then, the current study generally supports interactive effects for psychological aggression only.

**Aim 2b.** The goal of Aim 2b was to examine gender differences in the association among one’s own executive dysfunction and outcomes of dating aggression. Again, this aim was exploratory in nature given the lack of literature that has examined partner effects in prior marital or dating aggression literature. Among models with adequate fit, only the association between inhibition difficulties and sexual aggression showed gender differences. Specifically, males showed a nonsignificant positive association between their inhibition difficulties and their female partners’ outcomes of sexual aggression, whereas females showed a nonsignificant negative association between their inhibition difficulties and their male partners’ outcomes of sexual
aggression. No gender differences were observed across partner effects in models of psychological, physical, or sexual aggression with adequate model fit.

In regard to significant findings, female inhibition difficulties were associated with less frequent sexual aggression perpetration by their romantic partners, whereas males’ inhibition difficulties were associated with more frequent sexual aggression perpetration for females, though the parameter estimates were not statistically significant. Caution is warranted given that this association did not reach statistical significance, though these findings may again suggest that sexual aggression may not reflect a purely reactionary model for males. Again, this may be explained by a more coercive and deliberate use of sexual aggression by males than was anticipated based on extant literature, but may alternatively reflect deliberate effort from males to inhibit aggressive impulsive in the context of a partner with less well developed executive functioning abilities. Alternatively, it may be a product of the difficulty of measuring inhibition as discussed above. However, further research is necessary to clarify these hypotheses.

In regard to nonsignificant findings, gender differences were not supported for models of psychological aggression with adequate model fit. Further, no gender differences in partner effects were found for physical aggression. Finally, no additional indicators of executive dysfunction, beyond the aforementioned inhibition difficulties, showed significant gender differences in the association between executive dysfunction and sexual aggression. Therefore, in a novel extension of extant aggression literature, these findings broadly support similarity in females and males in terms of partner effects.

Aim 3
**Aim 3a.** The focus of Aim 3a was to explore the relative contribution of indicators of executive dysfunction to outcomes of psychological, physical, and sexual aggression among females. Generally, results revealed differences in the relative contribution of female executive dysfunction between psychological and physical aggression, as well as physical and sexual aggression. Specifically, female updating difficulties differed in magnitude of association between psychological and physical dating aggression perpetration. This was such that female updating difficulties showed a nonsignificant negative association with psychological aggression and a nonsignificant positive association with physical aggression perpetration. Note, here, that neither path was significant, in turn calling into question the meaningfulness of this finding. In addition, female inhibition difficulties differed in magnitude of association between physical and sexual dating aggression perpetration. This was such that female inhibition difficulties showed a significant negative association with physical aggression, whereas female inhibition difficulties showed a nonsignificant positive association with female sexual aggression.

In regard to significant findings, an examination of the pattern of results suggests that executive dysfunction was more strongly associated with physical aggression than psychological and sexual aggression for females when indicators of updating and inhibition were utilized, respectively. This means that in models using updating difficulties as the indicator of executive dysfunction, executive dysfunction did not show significant differences in the magnitude of association between either female physical and sexual aggression or female sexual and psychological aggression, though executive dysfunction was more strongly associated with female physical aggression than psychological aggression. Here, none of the paths reached significance when considered simultaneously. For models that used inhibition difficulties as the
indicator of executive dysfunction, executive dysfunction did not show significant differences in the magnitude of association between either female physical and psychological aggression or female sexual and psychological aggression, though executive dysfunction was more strongly associated with physical aggression than sexual aggression. In this model, executive dysfunction and physical dating aggression showed a significant negative association. Taken together, when differences in the relative magnitude of executive dysfunction and subtypes of dating aggression exist, they tend to favor a conceptualization wherein the executive dysfunction of females most consistently contributes to outcomes of physical aggression as compared to psychological and sexual dating aggression.

The current findings are novel because female executive dysfunction as associated with female aggression perpetration has not specifically been examined in the marital aggression literature. It is notable, however, that dating aggression literature has examined the association between measures inhibition and analog measures of psychological and physical aggression for females. The current findings suggest, then, that executive dysfunction may contribute to outcomes of physical aggression in particular.

Interestingly, the association between executive dysfunction and physical aggression was nonsignificant but positive when indicators of updating were used though significant and negative when indicators of inhibition were used. This finding highlights the importance of measuring executive dysfunction comprehensively, using indicators of shifting, updating, and inhibition because findings vary based on indicator used. In addition, though, these findings also suggest that updating and inhibition may play different roles in the development of dating aggression. Specifically, updating difficulties appear to contribute to increased physical
aggression, whereas inhibition difficulties appear to insulate from physical aggression perpetration. As discussed above, it may be that physical dating aggression is a more deliberate and intentional strategy than anticipated. Yet, it may also be that those with inhibition difficulties are actively compensating for inhibition difficulties by monitoring their behaviors. The current findings, wherein updating difficulties show a positive association, suggest that updating is an aspect of executive dysfunction that works to self-correct and monitor behaviors. Note, though that updating difficulties was not a significant predictor, and this interpretation should be tempered by nonsignificance of the association. Additionally, findings may reflect general difficulties with the measurement of inhibition as mentioned previously in the discussion, which will be further expanded upon in the ‘General Discussion’ section below.

Turning to nonsignificant findings, it is notable that the WCST and shifting difficulties did not reveal significant differences in the magnitude of association with subtypes of dating aggression. This is important because prior studies have largely relied on the WCST and other measures of shifting difficulties (e.g., Trail Making Task) in the study of marital aggression. The current findings suggest that multidimensional measurement of executive dysfunction is important in young adult female samples as the indicator of executive dysfunction that is utilized may impact findings.

**Aim 3b.** Aim 3b explored the relative contribution of indicators of executive dysfunction to outcomes of psychological, physical, and sexual aggression for males. Broadly, results revealed differences in the relative contribution of male executive dysfunction between physical and sexual aggression and between psychological and sexual aggression, though findings were limited to indicators of shifting. More specifically, male shifting difficulties differed in
magnitude of association between physical and sexual dating aggression perpetration, such that male shifting difficulties showed a nonsignificant negative association with physical aggression and a trend toward a positive association with sexual aggression perpetration. Additionally, male shifting difficulties differed in magnitude of association between sexual and psychological dating aggression perpetration, such that there was a trend toward a positive association between male shifting difficulties and sexual aggression and a nonsignificant negative association between male shifting difficulties and psychological aggression perpetration. However, the relative magnitude of the association between shifting difficulties and subtypes of aggression did not differ significantly between psychological and physical aggression.

In examining the pattern of findings, it is notable that shifting difficulties of males most strongly contributed to sexual aggression, as opposed to psychological and physical dating aggression. These findings suggest that shifting difficulties may be most useful in predicting outcomes of male sexual aggression for males. While past marital and dating aggression literature that has utilized indicators of shifting difficulties (e.g., WCST, Trail Making Task) has not precluded those that have perpetrated sexual aggression (e.g., Walling et al., 2012; Cohen et al., 1999; Cohen et al., 2003; Westby & Ferraro, 1999; Corvo et al., 2006; Teichner et al., 2001; Stanford et al., 2007; Schafer & Fals-Stewart, 1997; Schafer et al., 1994), it is also true that none of these studies specifically focused on sexual aggression. The current findings, then, illustrate that it is important to consider male sexual aggression in particular when examining the association among executive dysfunction and outcomes of dating aggression.

In addition, it is noteworthy that the WCST did not differentially predict dating aggression as many of the marital aggression studies utilized the WCST (e.g., Walling et al,
Further, updating and inhibition difficulties did not differentially predict outcomes of dating aggression. Taken together, these findings again highlight the importance of using several indicators of executive dysfunction in male, young adult samples as the indicator utilized may impact findings.

**General Discussion**

The current study provides several important contributions to extant dating aggression literature. First, the current study is to my knowledge the first to explicitly examine executive dysfunction as it predicts the frequency of dating aggression perpetration in a normative sample of late adolescents and young adults. This is important because executive functions continue to develop into adulthood (De Luca et al., 2003; Romine & Reynolds, 2005; Diamond, 2002; Center on the Developing Child at Harvard University, 2011), in turn suggesting that this unique population may warrant focused investigation. Further, the existing marital aggression has focused on incarcerated and treatment-involved men that may not be applicable to normative young adult samples. The current study extends the literature in that it generally supports an association between one’s own executive dysfunction and one’s own physical aggression for females and males, as well as one’s own executive dysfunction and one’s own sexual aggression perpetration for males. Thus, this study confirms the usefulness of examining executive dysfunction as it is associated with dating aggression in a normative young adult population.

Next, the current study is to my knowledge the first study across marital or dating aggression literature to examine partner characteristics as they impact outcomes of aggression. Findings revealed partner effects for outcomes of psychological dating aggression, such that
male updating difficulties contributed to more frequent female psychological aggression. These findings may be foreshadowed by extant literature. Specifically, Walling et al. (2012) found that men’s executive dysfunction was not associated with men’s psychological aggression perpetration, though a study conducted by Schafer et al. (1994) found that men’s executive dysfunction contributed to mutually-occurring psychological aggression in couples. Therefore, the current study confirms that both self and partner characteristics have utility in understanding aggression occurring within dating couples, particularly for psychological aggression.

In addition, the dyadic design of this study offered the advantage of allowing for the examination of gender differences. Whereas the extant marital aggression literature has focused on men, the one existing dating aggression study of which I am aware (Finkel et al., 2012) found that executive dysfunction was associated with female and male dating aggression using an analog measure of dating aggression. Yet, gender differences remained unexamined in the study by Finkel and colleagues. The current study showed that gender may impact findings, particularly for physical and sexual dating aggression. Relative comparison models suggest that executive dysfunction may be particularly useful in understanding female physical aggression, whereas executive dysfunction may be particularly useful in understanding male sexual aggression. Therefore, gender is an important factor to consider when examining the association between executive dysfunction and outcomes of dating aggression.

Next, the current study offered a comprehensive examination of dating aggression. Specifically, separate indicators of psychological, physical, and sexual dating aggression were examined. This was important because marital aggression has largely examined physical aggression, while extant dating aggression literature utilized a nonspecific analog measure of
dating aggression (see Finkel et al., 2012). By measuring psychological, physical, and sexual dating aggression individually, several patterns emerged. Specifically, as noted above, both females and males demonstrated associations between executive dysfunction and physical dating aggression, while males’ executive dysfunction was associated with increased frequency of sexual aggression. In addition, without having measured psychological aggression, male partner effects would have been overlooked. Moreover, by assessing subtypes of dating aggression, the current study was able to demonstrate differential impacts of executive dysfunction to outcomes of dating aggression. This was such that executive dysfunction was most strongly associated with physical aggression for females, and executive dysfunction was most strongly associated with sexual aggression for males pending the indicator of executive dysfunction used. Therefore, the current study demonstrates that each subtype of dating aggression is important to consider when investigating the association among executive dysfunction and dating aggression, as findings may vary by subtype of dating aggression assessed.

Relatedly, the current study offered a comprehensive examination of executive dysfunction. In general, the extant marital aggression literature has largely relied on indicators of shifting difficulties, such as perseverative errors of the WCST or the Trail Making Task. The only study of dating aggression utilized a measure of inhibition difficulties (i.e., Stroop Task; Finkel et al., 2012) to examine executive dysfunction. Thus, past measurement has been limited because Miyake and colleagues (2000) have demonstrated that executive functions are varied in presentation and may be conceptualized to include shifting, updating, and inhibition difficulties. Therefore, the current study expanded upon measurement of executive dysfunction from past marital and dating aggression research. Findings of the current study demonstrate it is essential
to measure executive dysfunction with several indicators because information would have been lost if single indicators had been used. For example, perseverative errors of the WCST did not demonstrate associations with outcomes of dating aggression across adequately fitting models despite its use in the marital aggression literature. Furthermore, tasks of shifting, updating, and inhibition each provided unique pieces of information in the current findings. Specifically, indicators of inhibition difficulties were useful in demonstrating the association between one’s own executive dysfunction and one’s own physical aggression perpetration for females and males, indicators of shifting difficulties were useful in demonstrating the association between one’s own executive dysfunction and one’s own sexual aggression perpetration for males, and updating difficulties were useful in demonstrating the association between males’ executive dysfunction and females’ outcomes of psychological aggression. Further, indicators of updating and inhibition difficulties revealed differences in the relative contribution of executive dysfunction to outcomes of dating aggression for females, whereas shifting difficulties revealed differences in the relative contribution of executive dysfunction to dating aggression for males. Thus, each subcomponent proposed by Miyake et al. (2000) provided unique information in understanding the association between executive dysfunction and dating aggression within dating couples.

Taken together, the current study has several features that will be further discussed as they have inform the broader literature. First, the current findings are generally consistent with broader dating aggression research and theory. For example, consistent with dating aggression research (Sears et al., 2007), psychological, physical, and sexual dating aggression tended to co-occur within individuals across females and males, though not uniformly as female
psychological and sexual dating aggression were not correlated. Additionally, in regard to the DDS theory (e.g., Capaldi et al., 2005), the current study does offer support for this theoretical model of aggression. As is predicted by the DDS theory and has been demonstrated in marital samples (Jester et al., 2009), females and males showed similarity in terms of their executive dysfunction as measured by perseverative errors of the WCST. In addition, females and males showed similarity in terms of their frequency of psychological and sexual dating aggression perpetration. Further, results of dyadic models revealed evidence for not only actor effects for females and males for physical aggression and males’ sexual aggression but also male partner effects for psychological aggression. Thus, as anticipated by the DDS model, updating difficulties of males are associated with female psychological dating aggression perpetration. Therefore, the current study illustrates the importance of considering characteristics of both dating partners when examining risk for dating aggression perpetration, particularly when examining psychological aggression.

Next, the current study warrants further discussion of the explanatory power of executive dysfunction to outcomes of dating aggression as it informs the impact of gender on findings. Several important trends were observed. First, the API Ms of psychological aggression tended to show poor model fit across all indicators of executive dysfunction but updating difficulties. Further examination of findings revealed that poor model fit may have been caused by the limited variance that executive dysfunction could account for in female outcomes of psychological aggression (2-3%). However, the API Ms of psychological aggression accounted for 10-13% of the variance for males, suggesting that males’ executive dysfunction accounted for more variance than for females. This general trend was further confirmed by the relative
contribution SEMs, wherein executive dysfunction could only account for 0-2% of the variance in female outcomes of psychological aggression though accounted for 15% of the variance for males. Together, these findings suggest that the association between executive dysfunction and psychological aggression may be limited for females. On the other hand, the association between executive dysfunction and physical aggression accounted for more variance for females (i.e., 3-8%) than males (i.e., 0-2%) across APIMs and relative contribution models, in turn suggesting greater contribution of executive dysfunction to outcomes of physical aggression among females. Finally, males’ executive dysfunction explained a larger portion of the variance in outcomes of sexual aggression (i.e., 6-8%) as compared to females (i.e., 0-2%). These findings are further mirrored across the APIMs and SEMs, in that females only showed significant actor effects for executive dysfunction and physical aggression and significant associations between executive dysfunction and physical aggression when psychological, physical, and sexual aggression were considered together. While males showed actor effects for both physical and sexual aggression in the APIMs, only the association between male executive dysfunction and sexual aggression showed significant findings when psychological, physical, and sexual aggression were considered together for males within the relative contribution models. These findings were further confirmed by relative contribution analyses with equality constraints that revealed that female physical aggression tended to be more strongly associated with executive dysfunction as compared to psychological and physical aggression, as well as equality constraints that showed that male sexual aggression tended to be more strongly associated with executive dysfunction than psychological and physical aggression. A caveat here is that these findings were not uniformly found across models using different indicators of executive dysfunction. Taken
together, this study provides evidence for stronger contributions of female executive dysfunction to outcomes of physical aggression. On the other hand, males tended to show the strongest association between executive dysfunction and sexual dating aggression. The reason for this is not entirely clear. However, the current findings inform Nigg and Pollock-Huang’s (2003) claim that executive dysfunction may play a greater role in female delinquency and aggression. Rather than a greater role in female aggression, the current study would suggest that executive dysfunction may play a different role in aggression than males, such that executive dysfunction may be differentially related to the types of aggression females and males perpetrate (i.e., physical aggression for females and sexual aggression for males). Yet, future research may be necessary to confirm this pattern holds across studies.

In addition, several findings in the current study depart from past marital and dating aggression literature which may have relevance to the measurement of executive dysfunction. These points are reviewed in what follows as organized by subtype of dating aggression assessed. In regard to psychological aggression, the reader is reminded that no significant associations were found between one’s own executive dysfunction and one’s own psychological aggression perpetration for females or males, though male updating difficulties were associated with female psychological aggression perpetration. These findings are both anticipated by, but yet also depart from, past marital and dating aggression literature. Specifically, marital literature that has used indicators of shifting difficulties (e.g., WCST) did not find an association between men’s executive dysfunction and psychological aggression (Walling et al., 2012). Yet, other marital literature that has used indicators of shifting and updating difficulties (i.e., Stroop task and Trail Making Test) has found that male executive dysfunction contributes to mutually
occurring psychological aggression in couples (Schafer et al., 1994). Thus, the current findings are generally in line with what might be anticipated based upon these studies. Yet, because inhibition difficulties (i.e., Stroop task) contributed to both female and male analog measures of dating aggression (i.e., voodoo doll task), which is correlated with psychological and physical aggression (Finkel et al., 2012), the results are also divergent from what might be expected. In regard to physical aggression, as discussed above, past marital aggression studies have largely confirmed associations between male executive dysfunction across indicators of shifting, updating, and inhibition (e.g., Marsh & Martinovich, 2006; Cohen et al., 1999; Cohen et al., 2003, Westby & Ferraro, 1999; Corvo et al., 2006; Teichner et al., 2001; Stanford et al., 2007), such as perseverative errors of the WCST, Trail Making Test, Stroop task, and Digit Symbol task. Further, dating aggression literature has demonstrated an association between a task of inhibition difficulties (i.e., Stroop task) and an analog measure of physical dating aggression (Finkel et al., 2012). Additionally, some evidence for partner effects has been alluded to based upon studies that have found that shifting, updating, and inhibition difficulties, as measured by the Trail Making Test, Stroop task, and Booklet Category task, are associated with total couple physical aggression (Schafer et al., 1994; Schafer & Fals-Stewart, 1997). Yet, the findings of the current study found associations among one’s own executive dysfunction and one’s own physical aggression perpetration in the opposite manner expected, such that greater inhibition difficulties contributed to less frequent physical dating aggression for females and males, when the Go/No-Go task was used as an indicator of inhibition. Additionally, associations between one’s own executive dysfunction and one’s partner’s outcomes of physical dating aggression were not supported. In regard to sexual aggression, the association between male shifting difficulties and
male outcomes of sexual aggression is largely consistent with past marital aggression studies that have studied men convicted of marital aggression using indicators of shifting difficulties, such as the Trail Making Test or WCST (e.g., Stanford et al., 2007), without the preclusion of those who perpetrated sexual aggression. Taken together, the indicator used to measure executive dysfunction may impact findings. However, it may also be that there are true differences in the way in which the association between executive dysfunction and aggression in young adult dating samples that are being illustrated in the current sample.

Perhaps the most striking evidence for discrepancies between past marital aggression literature and the current study is findings obtained using perseverative errors of the WCST. Generally, past marital aggression literature has found that males’ perseverative errors on the WCST are associated with marital aggression (Walling et al., 2012; Cohen et al., 1999; Westby & Ferraro, 1999; Corvo et al., 2006; for exception see Stanford et al., 2007). Yet, in the current study, perseverative errors of the WCST were not associated with any of the subtypes of dating aggression across models with adequate model fit. Thus, this is a significant departure from the general and marital aggression literature. A reason for this may be that there is truly no association between executive dysfunction and dating aggression when this clinically-normed indicator is used. On the other hand, this may call into question the utility of assessing executive dysfunction using the WCST in young adult samples as it informs outcomes of dating aggression. Indeed, effects were found when Miyake’s conceptualization was used, including indicators of shifting, updating, and inhibition. Therefore, the indicator of executive dysfunction is likely to impact findings in the study of dating aggression.
A discussion of the measurement of executive functions becomes relevant here. Many authors have discussed the difficulties inherent in both defining and assessing executive functions (e.g., Miyake et al., 2000; Zelazo & Müller 2010; Suchy, 2009; Jurado & Rosselli, 2007; Chan, Shum, Touloupolou, & Chen, 2008). As discussed in the ‘Introduction’ section of this document, executive functions are not clearly defined. Moreover, these cognitive difficulties can have broad and varied impact on everyday behaviors (e.g., Burgess et al., 2006). As a result, clarity of measurement is far from having been reached. Directly relevant to the current study is the discussion of Miyake and colleagues (2000) model of executive functions, as well as discussion of the WCST in particular. Miyake’s model of executive functions was selected due to its general acceptance and comprehensive nature. Further, Miyake’s model was developed in a sample of college students, which was an advantage for the current study of young adults recruited through a college setting. Yet, some studies have found additional subcomponents of executive function when attempting to replicate findings (e.g., Fisk & Sharp, 2004), in turn illustrating that this definition may not be capturing all facets of executive functions. In addition, the WCST, despite being one of the most widely used measures of executive dysfunction in the clinical literature, has been questioned as a true measure of executive functions (e.g., Barceló, 2001). Thus, while shifting, updating, and inhibition abilities are indeed a useful starting point, they may not capture all aspects of executive functioning cognitive abilities as they impact a broad and varied range of behaviors attributed to executive functions.

It is also relevant to discuss the impact of developmental stages as they impact the current discussion of measurement and methodology. As discussed above, the current adolescent and young adult sample was selected because executive functions develop into adulthood (De Luca
et al., 2003; Romine & Reynolds, 2005; Diamond, 2002; Center on the Developing Child at Harvard University, 2011), making this developmental time point unique. In the current sample, male inhibition difficulties showed a negative correlation with male age. Thus, a complex interaction between age and executive dysfunction may moderate the current findings. Specifically, shifting, updating, and inhibition abilities show variability in their development (e.g., Huizinga, Dolan, & van der Molen, 2006; Lee, Bull, & Ho, 2013; Romine & Reynolds, 2005; Center on the Developing Child at Harvard University, 2011). For example, Huizinga and colleagues (2006) demonstrated that shifting, updating, and inhibition vary in their rate of development. In this study of children through young adults, shifting abilities did not reach adult levels until adolescence, updating did not reach adult levels until young adulthood, and inhibition did not reach adult levels until young adulthood. It is notable, however, that individual indicators of measurement did impact findings, particularly for inhibition (Huizinga et al., 2006). However, this pattern has not been uniformly shown, likely owing to the non-uniform abilities implicated in shifting, updating, and inhibition abilities (e.g., Center on the Developing Child at Harvard University, 2011). De Luca and colleagues (2003) demonstrated that aspects of executive functions develop into young adulthood, and perhaps peak between the ages of 20-29 years. While executive functions were not measured in this study with focus on Miyake and colleagues (2000) model, shifting tended to develop in childhood whereas updating (i.e., working memory) developed into adulthood. Thus, even within the current sample of 18-29 year-olds, much variability may be found in the development of executive functions across younger and older participants, in turn impacting findings. Given that the development of executive functioning is far from being clear and uniform, I cannot definitely speak to the way in which age may impact
findings. However, it is notable that shifting and inhibition, which both develop later than updating in a study that conceptualized executive functions parallel to Miyake and colleagues (2000) work, were the indicators that revealed significant actor effects and significant paths in the relative contribution models. Thus, it may be that shifting and inhibition are particularly relevant in understanding dating aggression in young adult samples.

Relatedly, the interplay between gender and the development of executive functions is worth noting. While findings are mixed, particularly in regard to the development and presentation of executive functions in early childhood and adolescence (see for examples Anderson, Anderson, Northam, Jacobs, & Catroppa, 2001 or Yücel et al., 2012), De Luca and colleagues (2003) found that males tended to outperform females on tasks of executive functions across development. In the current study, however, females and males did not differ across their performance on the WCST or tasks of shifting, updating, and inhibition. Thus, in light of their similar levels of performance across measures of executive dysfunction in the current study, the current study does not clearly support a moderating effect of the interaction between gender and the development of executive functions. However, given that males showed a negative correlation between age and inhibition difficulties, it may be that a more complex interaction between age, gender, and neurodevelopment may be present. This is mostly likely to impact the association between inhibition difficulties and outcomes of aggression for males though longitudinal research is necessary to further clarify this point.

In addition, it may be that alternative conceptualizations of executive dysfunction, beyond shifting, updating, and inhibition difficulties, may be more useful in predicting aggression outcomes. As discussed above, executive functions are generally associated with
prefrontal functions (Brower & Price, 2001; Luria, 1966; Miller & Cohen, 2001), though also relies on the integrity of other networks of the brain, such as the limbic system (Zelazo & Müller, 2002; Zelazo & Müller 2010). Yet, some have argued for “hot” and “cool” subcomponents of executive functions that can be localized within unique areas of the brain (Kerr & Zelazo, 2004; Metcalfe & Mischel, 1999; Zelazo & Müller, 2002; Zelazo & Müller, 2010; Zelazo & Müller, 2005). Cool aspects of executive functions are generally thought of as route cognitive abilities that are free from emotion, and are housed in the dorsolateral prefrontal cortex (Zelazo & Müller, 2002). The current study utilized indicator of cool executive functions, as the WCST, shifting, updating, and inhibition difficulties generally associated with areas of the brain that are associated with cool executive functions (see Collette et al., 2006 for further information on localization of WCST, shifting, updating, and inhibition difficulties). On the other hand, hot aspects of executive functions are those that are involved in the processing of emotions and problem-solving in high-emotion contexts. These abilities are generally housed in the ventral and medial regions of prefrontal cortex and anterior cingulate cortex (Zelazo & Müller, 2002). It may be that hot executive functions are a more suitable candidate for risk for dating aggression, because dating aggression generally occurs in highly emotional circumstances. It is quite intuitive, then, that the tasks included in this study may not directly pull for the same executive functions with the same emotional intensity that may occur in actual instances of dating aggression. Thus, further investigation of executive dysfunction that occurs in highly emotional scenarios may be helpful in further clarifying the contribution of executive functions to dating aggression.
It is important to recognize that the current study conceptualized and measured executive dysfunction as a dispositional correlate of dating aggression. However, it is also likely that executive dysfunction may serve as a situational correlate of aggression within a given aggressive interaction due to the dynamic nature of executive dysfunction. In particular, because executive functions operate within a limited-capacity system of resources, require effort, and can be exhausted in high demand contexts (Schmeichel, 2007; Séguin et al., 1999; Struss, 1992; Welsh & Pennington, 1988; see Séguin et al., 1999), environmental factors can impair executive functions (e.g., sleep deprivation, stress, high emotions). For example, conflict and negative emotions can result in executive dysfunction (Paschal & Fishbein, 2002; Padmala, Bauer, & Pessoa, 2011), which is directly relevant given that such factors are those most likely to characterize instances of aggression. Thus, measuring executive dysfunction at a dispositional level may not capture moment-to-moment fluctuations of executive dysfunction that may contribute to dating aggression.

Finally, the current study provides an important step in understanding the association among executive dysfunction and dating aggression. Yet, when reviewing the current study, it is important to remember that executive dysfunction is just one aspect of a larger set of interactive risk factors for dating aggression (see Corvo, 2014). Specifically, the current model provides the advantage of assessing executive functioning characteristics of both members of dating dyads, with aim to understand the interactive processes that occur within dating couples as proposed by the DDS model (e.g., Capaldi et al., 2005). Yet, the executive dysfunction of self and partner are among many correlates that can be impacted by and contribute to other risk factors for dating aggression. For example, the current study considered many control variables. Findings
suggested that intelligence and relationship satisfaction are among the variables that may impact the association between executive dysfunction and dating aggression. Yet, simply controlling for these variables may not capture the dynamic effect these correlates have in dating aggression. As an example, executive functions have been demonstrated to play a protective role in romantic relationship fidelity (Pronk, Karremans, Overbeek, Vermulst, & Wigboldus, 2010), which may in turn play a protective role for relationship satisfaction. Thus, interactive effects of executive functions may occur at a broader relationship level.

In addition, the control variables that were not found to be associated with dispositional executive functions may also operate in more complex ways. For example, executive dysfunction has been demonstrated to moderate the association between alcohol use and perpetration of aggression (Giancola, 2004; Hoaken, Giancola, & Pihl, 1998), particularly in those with dispositional executive dysfunction (Giancola, 2000; 2004). Similarly, Corvo et al. (2006) proposed executive dysfunction as a mediator between alcohol use and marital aggression perpetration (see Corvo et al., 2014 for further discussion). Again, evidence is found interactive effects between executive dysfunction and correlates of dating aggression, wherein executive dysfunction both directly and indirectly contribute to outcomes of dating aggression.

While a full discussion of the interactive effects of correlates is beyond the scope of the current study, it may be worthy to introduce two theories that may help to situate executive dysfunction within the broader conceptualization of risk and protective factors in dating relationships. Specifically, the Riggs and O'Leary’s background-situational theory of courtship aggression (1989) incorporates both dispositional (i.e., background risk factors such as exposure to models of aggression and psychopathology) and situational risk factors (e.g., conflict, stress,
alcohol use) for aggression. Within this theory, it is conceivable that executive functions could serve as both a background and situational factor impacting dating aggression, both directly and indirectly as it interacts with other risk factors for dating aggression. In addition, the I³ theory of Finkel and colleagues (Finkel, 2007; Finkel et al., 2012) conceptualizes risk for aggression to include instigation, impellance, and inhibition factors. The reader is reminded that the work of Finkel and colleagues (2012) suggests that executive dysfunction interacts with dispositional physical aggressiveness and partner provocation to confer risk for aggression. Here, dispositional executive functions were conceptualized to contribute to inhibition, though it is conceivable that executive functions may also moderate aggressive tendencies on a more dynamic level. Thus, there is evidence that suggest that executive functions, both as a dispositional and situational correlate of aggression, may confer risk for or insulate from aggressive interactions by interacting with broader relationship processes. Therefore, the current findings should be viewed within the larger literature, with recognition that the current study is a simplified representation of the nature of the associations between executive dysfunction and dating aggression.

**Limitations & Future Research Directions**

While the current study is an important step in understanding the association between executive dysfunction and dating aggression, there are several ways the current study could be improved in future research investigations. First, the current study focused on young adult dating couples, spanning the ages of 18-29 years. However, due to the nature of the development of executive functions, this sample may be quite varied in their development of executive functions. For instance, research has demonstrated that executive functions continue to develop into adolescence and young adulthood (e.g., Huizinga et al., 2006; Lee et al., 2013; Romine &
Reynolds, 2005; Center on the Developing Child at Harvard University, 2011; De Luca et al., 2003), though may peak between the ages of 20-29 (De Luca et al. 2003). Therefore, younger and older participants even within the span of late adolescence and young adulthood may vary in their level of executive functioning generally and in terms of individual indicators of shifting, updating, and inhibition in particular (De Luca et al. 2003; Huizinga et al., 2006; Lee et al., 2013; Romine & Reynolds, 2005; Center on the Developing Child at Harvard University, 2011). Further, some evidence for age effects were found for male inhibition abilities, such that inhibition difficulties decreased with age. Thus, it may be useful to further investigate the association between executive dysfunction and dating aggression in a longitudinal manner, with attention to the progression of this association across adolescence and young adulthood.

Next, a strength of the current study was the diversity of executive functioning abilities assessed, including a clinically-normed measure of shifting (i.e., perseverative errors of the WCST) and tasks of shifting, updating, and inhibition. Miyake and colleagues (2000) proposed three indicators of each dimension of executive functions, of which I aimed to select one task that assessed each dimension of executive functions, along with the WCST. However, the decision was made to substitute in the Go/No-Go task for a measure of inhibition, given its wide use and precedent set in the extant literature (Harvey et al., 2004). Yet, measurement of executive functions could further be improved. Evidence for this is found through several findings in the current study. Specifically, it was somewhat surprising that the WCST was not associated with the included measure of shifting difficulties (i.e., Plus-Minus task). Moreover, while shifting, updating, and inhibition difficulties each contributed useful information in this young adult sample, these subcomponent abilities were not consistently correlated. As a result,
executive dysfunction could not be examined as a latent construct in the current sample. These findings are a departure from Miyake and colleagues (2000) work that suggests that shifting, updating, and inhibition are separate but correlated, with the WCST demonstrating associations with shifting. While other studies have found small associations between these subcomponents of executive functions, in turn calling into question the overall unitary nature of executive functions (see Fisk & Sharp, 2004 for example), it may be that the measures that were selected do not fully capture the intended constructs. Of particular concern is the indicator of inhibition difficulties used in the current study (i.e., Go/No-Go task), which produced findings that were opposite of those expected. Inhibition abilities, in particular, tend to be multifaceted and difficult to measure across development (Friedman & Miyake, 2004; Nigg, 2000; Collette et al., 2006; Huizinga et al., 2006). In addition, the Go/No-Go task also may show unique properties (Garavan et al., 2006) that do not allow a simple substitution into Miyake’s definition of executive functions. Therefore, future studies would be improved with more comprehensive inclusions of shifting, updating, and inhibition tasks that have been proposed by Miyake and colleagues (2000), with each subdomain measured at a latent level to attenuate measurement difficulties associated with each of the subdomains. Moreover, it may be helpful for researchers to adopt a consistent set of assessment tools, such as those proposed by Miyake and colleagues (2000), in order to elucidate associations across age groups. Together, this would offer a more comprehensive assessment of the facets of each subcomponent of executive functions (i.e., shifting, updating, and inhibition) as they impact outcomes of dating aggression and further clarify the findings of the current study.
Relatively, as discussed above, it would be beneficial to assess executive functions using indicators that are more relevant to dating aggression perpetration. Though a departure from Miyake and colleagues’ model that generally assesses “cool” executive functions (Collette et al., 2006), it may be that “hot” executive functions provide a more ecologically valid indicator of executive functions for the purpose of understanding aggression (Kerr & Zelazo, 2004; Metcalfe & Mischel, 1999; Zelazo & Müller, 2002; Zelazo & Müller, 2010; Zelazo & Müller, 2005). For example, Gambling Tasks have been found to be useful in the measurement of hot executive functions (e.g., Bechara, Damasio, Damasio, & Anderson, 1994; Zelazo & Müller, 2010). Thus, future studies could expand measurement of executive dysfunction in this meaningful way.

In addition, it is worth noting that care was taken to avoid confounding intelligence with the contribution of executive dysfunction to dating aggression. This decision was guided by literature documenting associations between these cognitive abilities and precedent set by past marital aggression literature (e.g., Oberauer, 2005; Cohen et al., 2003). Yet, additional neuropsychological correlates of executive functions, such as processing speed, attention abilities, and verbal fluency, may be important to consider as they impact the association among executive dysfunction and dating aggression (e.g., (Fisk & Sharp, 2002; Cohen et al., 2003; Twamley et al., 2009). Such an extension would help to clarify the unique contribution of executive dysfunction to dating aggression, as opposed to broader cognitive processes.

Next, the current study offered a unique assessment of self-reported frequency of acts of dating aggression, including psychological, physical, and sexual dating aggression perpetration. This advanced measurement from several of the past marital and dating aggression studies in that this mode of measurement allowed for individual differences to be explored in frequency of acts.
of aggression, as opposed to group-based differences and/or analog measures of aggression. Yet, it is notable that self-report measures also cannot be considered to provide a full picture of dating aggression. Because individuals generally tend to underreport their own aggression (Archer, 1999), self-report designs of perpetration are limited. As an alternative, several options are available that may improve measurement, including cross-information designs of both aggression perpetration and victimization (e.g., Archer, 1999; Achenbach et al., 2005; Caspi et al., 2001; Klipfel & van Dulmen, 2012), observational methodology (e.g., van Dulmen, Mata, & Klipfel, 2012), and analog measures (e.g., voodoo doll task; DeWall et al., 2013). Several of the aforementioned studies of marital and dating aggression utilized such options (e.g., Warnken et al., 1994; Schafer et al., 1994; Finkel et al., 2012; Schafer & Fals-Stewart, 1997). In the current study, cross-informant data was collected though this data did not consistently correlate with self-reports and demonstrated lower reliability. For this reason, cross-informant data was not utilized. However, future research may benefit from inclusion of cross-informant data, as well as alternative modes of measurement free from self-report bias such as observational techniques.

Relatedly, an important next step in understanding the association between executive dysfunction and dating aggression is to examine executive dysfunction as a correlate of victimization. This is important for several reasons. First, past marital literature has documented executive dysfunction in victims of marital aggression (e.g., Stein et al., 2002; Fennema-Notestine et al., 2002). Given that perpetration and victimization tend to co-occur (Capaldi & Crosby, 1997; Gray & Foshee, 1997; Jennings, Piquero, & Reingle, 2012; Whitaker et al., 2007; Klipfel & van Dulmen, 2012; Fergusson et al., 2005) and many of the risk factors are similar between perpetration and victimization (e.g. O’Keefe Treister, 1998; Gray & Foshee, 1997;
Straus & Ramirez, 2007), it may be that executive dysfunction is also a correlate of victimization. Further, findings in the current study of dating aggression perpetration imply victimization is occurring within these same relationships. However, the correlations between perpetration and victimization were not entirely duplicative, in turn suggesting that unique information is provided by reports of victimization. For this reason, future studies can inform our understanding of dating aggression victimization by including executive dysfunction.

Next, the current study offered an examination of individual differences in the frequency of dating aggression perpetration. Yet, future studies of dating aggression may expand measurement by further examining the nature of acts of aggression. Specifically, severity of aggression is a worthy candidate for further consideration for several reasons. First, individuals with executive dysfunction often show difficulty in monitoring consequences of their behaviors (e.g., Paschall & Fishbein, 2002; Ridderinkhof, et al., 2004), in turn likely contributing to difficulties understanding the severity of their actions. In addition, several of the marital aggression studies demonstrated the importance of incorporating severity of aggression into understanding the association between executive dysfunction and aggression (e.g., Walling et al., 2012; Corvo et al., 2005; Schafer & Fals-Stewart, 1997). Additionally, many of the marital aggression studies were conducted in samples of men who had been convicted or treated for their perpetration of aggression (e.g., Teichner et al., 2001; Stanford et al., 2007; Marsch & Martinovich, 2006). Thus, future studies may be necessary that either (a) examine severity ratings for aggressive acts, (b) utilize more severe items of aggressive acts scales (e.g., CTS-2 or CADRI scales; Straus et al., 1996; Wolfe et al., 2001), or (c) examines adolescent and young adult populations that have been involved in justice or treatment settings.
Finally, future studies should expand on the current study by placing executive dysfunction and dating aggression within the broader literature. First, as mentioned above, executive dysfunction is only one facet of many factors that impact dating aggression. Because executive dysfunction can be considered to have both dispositional and situation-based properties, it is worthy to investigate executive dysfunction at both a dispositional and dynamic level. Relatedly, it will be important to examine these association using indicators of “cool” executive functions examined in this study, as well as the “hot” executive functions proposed to be involved in emotionally-laden situations. Moreover, future investigations will need to incorporate the direct effects that executive dysfunction has on outcomes of dating aggression, as well as indirect effects executive dysfunction may have through other correlates of dating aggression. In addition, by including additional neuropsychological factors, such as processing speed and verbal deficits, the unique contribution of executive functions can be further clarified.

Second, it is also the case that dating aggression is a dynamic process itself. For example, research has documented evidence for the progression and escalation of aggression over time (e.g., Murphy & O’Leary, 1989). For example, studies have shown that psychological aggression can co-occur with and/or precede both physical and sexual coercion (e.g., Katz, Carino, & Hilton, 2002; Murphy & O’Leary, 1989; Sears et al., 2007). Moreover, risk factors for this type of aggression are plentiful (see Capaldi, Knoble, Shortt, & Kim, 2012 for discussion of risk factors) and likely dynamic in their own right. However, one particular risk factor that this study did not explore that may require further clarification is intentionality of aggressive acts. Indeed, there is literature to suggest that both females and males use aggression in a coercive manner (e.g., Dutton & Goodman, 2005; Graham-Kevan & Archer, 2005; Ronfeldt, Kimerling, & Arias, 2005).
1998), though it is also the case that aggression is often reciprocal or used a means of self-defense (e.g., Graham-Kevan & Archer, 2005; Muñoz-Rivas et al., 2007; Capaldi & Crosby, 1997; Fergusson et al., 2005; Gray & Foshee, 1997; Jennings et al., 2012; Whitaker et al. 2007). It is easily recognizable that motivations for the use of aggression are likely to be fluid. Because the current study found a negative association between inhibition difficulties and frequency of physical dating aggression perpetration for both females and males, it is worthwhile to clarify the impact that intention and motivations have in individual acts of aggression. While this is likely to be no easy feat, diary studies may offer the advantage of capturing moment-to-moment interactions that may inform the relationship between executive dysfunction and outcomes of dating aggression.

**Clinical Implications**

The current study demonstrates that executive dysfunction is a meaningful, yet generally neglected, correlate of dating aggression for females and males. For this reason, the current study has direct implications for revisions of dating aggression theory, clinical prevention efforts, tools for assessing risk for dating aggression, and clinical intervention. First, in regard to dating aggression theory, it becomes necessary to consider revisions of dating aggression theory as it informs clinical intervention and prevention efforts. The weight of the conclusions from this study indicates that executive dysfunction of both self and partner are meaningfully associated with dating aggression perpetration. While the I³ theory (Finkel, 2007; Finkel et al., 2012) has incorporated executive dysfunction into theory, the current study suggests that both self and partner characteristics of executive dysfunction are relevant to dating aggression. Therefore, I would argue for the routine inclusion of self and partner characteristics of executive dysfunction
into models of relationship aggression, including but not limited to prominent theories such as the DDS perspective (e.g., Capaldi et al., 2005), I³ theory (Finkel, 2007; Finkel et al., 2012), and the background-situational theory of courtship aggression (Riggs & O'Leary, 1989). The inclusion of both self and partner characteristics of executive dysfunction may in turn lead to greater predictive validity in identifying those at risk for dating aggression perpetration, in turn bolstering clinical intervention strategies. This means that clinical intervention would do well to recognize both self and partner characteristics of executive dysfunction as it informs intervention strategies. Moreover, the current study offers specific guidance as to how executive dysfunction may contribute to aggression within these models. Specifically, for late adolescent and young adult females, the current study would suggest that executive dysfunction may be particularly relevant to outcomes of female physical aggression. For late adolescent and young adult males, the current study would suggest that executive dysfunction may be most relevant to sexual aggression perpetration, though not exclusively in that male executive dysfunction was also associated with physical aggression perpetration and their female partner’s use of psychological aggression. Thus, the current study directly informs models of relationship aggression and can guide nuances of this theory and resulting clinical practices.

Next, the current study can inform prevention efforts. While executive dysfunction was not studied longitudinally — and therefore cannot assume causality — trends in the reviewed literature and current findings may inform prevention efforts. First, early identification of risk for aggression may interrupt the development of aggression. Therefore, because executive dysfunction can be observed and assessed in young children and adolescence (e.g., De Luca et al., 2003; Romine & Reynolds, 2005; Diamond, 2002; Center on the Developing Child at
Harvard University, 2011; Huizinga et al., 2006; Lee et al., 2013), it may be possible to intervene before dating aggression develops (Teichner & Golden, 2000). While it is beyond the score of the current findings, it is relevant to note that there is some evidence to suggest that executive dysfunction places individuals at risk for ongoing adversity in relationships (e.g., see Fennema-Notestine et al., 2002). For example, the reviewed marital aggression literature implicates childhood abuse in male aggression perpetration (e.g., Rosenbaum & Hoge, 1989) and female victimization (e.g., Fennema-Notestine et al., 2002). These early experiences of childhood abuse themselves may contribute to executive dysfunction, in turn setting a propensity for continued involvement in aggression (see Fennema-Notestine et al., 2002). Thus, early intervention through the identification of executive dysfunction may be one means to interrupt the progression of adversity in dating relationships. This point is worthy of review, as the current study does provide evidence for the presence of executive dysfunction in individuals who perpetrate aggression. Thus, I would make the case that it is probable that early intervention for executive dysfunction that may predate aggression may be one avenue to enhance dating aggression prevention strategies.

Turning to the assessment of risk for dating aggression, it may be that the inclusion of executive dysfunction into models of risk for aggression offers advantages. Note that many of the risk factors for dating aggression are assessed via paper-and-pencil questionnaires, often relying on self-reports. However, as discussed above, self-report measures are prone to response biases, particularly in aggressive samples. For example, there is some evidence that perpetrators of aggression underreport negative characteristics (e.g., Archer, 1999). However, because tasks of executive function are often performance-based, self-report biases are not an issue. Moreover,
many performance-based measures can be examined for validity or have validity indicators. In addition, clinically normed tools are available that allow for collateral reports from others (e.g., Behavior Rating Inventory of Executive Function; BRIEF; Gioia, Isquith, Guy, & Kenworthy, 2000). Further, the current study suggests that tasks of shifting, updating, and inhibition (i.e., Plus-Minus, Letter Memory, Go/No-Go tasks), as guided by Miyake et al., 2000, are useful in the measurement of executive dysfunction as it predicts dating aggression. In addition, past dating aggression literature has shown the Stroop Interference Trial (Golden, 1978) to be useful (Finkel et al., 2012). Because these performance-based tasks are generally quick and easily administered, they could be implemented readily. Further, there are several additional and appropriate options for the measurement of executive dysfunction in young adults (e.g., D-KEFS, Delis, Kaplan, & Kramer, 2001; NIH Toolbox, Weintraub et al., 2013; Stroop Interference Trial, Golden, 1978), though the association between executive dysfunction and dating aggression have yet to be replicated using these batteries. Taken together, then, incorporating executive dysfunction into models of aggression may impact the way in which risk for aggression is assessed, perhaps in positive ways.

Finally, executive dysfunction may have implications for current dating aggression intervention strategies. While some interventions are available (e.g., Safe Dates), these programs tend to address gender stereotypes, dating norms, and community services. Unfortunately, the efficacy of these programs tends to be small to moderate in decreasing dating aggression perpetration (e.g., Capaldi, & Langhinrichsen-Rohling, 2012; Foshee et al., 1998; Foshee et al., 2005). However, intervening on executive dysfunction may be a valuable, alternative strategy to decrease dating aggression perpetration. Borrowing from general aggression literature, Paschall
and Fishbein (2002) suggest that intervention is possible and promising for executive functioning deficits. Indeed, research indicates that executive functions can be strengthened through exercises (e.g., Kray & Epplinger, 2006; Dahlin, Nyberg, Bäckman, & Neely, 2008; Davidson, Zacks, & Williams, 2003; for exception see Rapport, Orban, Kofler, & Friedman, 2013). Interventions include cognitive skill building, neurorehabilitation strategies, problem-solving intervention, and social processing therapies (see Paschall & Fishbein, 2002 for review). In a related manner, recent research conducted in a college sample has suggested that training in self-regulatory behaviors and increased cognitive processing time can result in decreased dating aggression perpetration (Finkel et al., 2009). Therefore, current interventions for dating aggression may greatly benefit by adopting new approaches to preventing dating aggression. Taken together, then, executive dysfunction is a risk factor for dating aggression perpetration that is worthy of assessing and rehabilitating in adolescent and young adult populations.

Conclusions

The current study extends the literature by examining the contribution of several dimensions of executive dysfunction (i.e., shifting, inhibition, and updating difficulties) to the frequency of dating aggression perpetration (i.e., psychological, physical, and sexual dating aggression) in a dyadic study of young adults. In regard to the association between one’s own executive dysfunction to one’s own outcomes of dating aggression, the main findings of this study are that (1) females’ and males’ inhibition difficulties contribute to their respective genders’ outcomes of physical dating aggression perpetration, and (2) male shifting difficulties contribute to male sexual dating aggression perpetration. In regard to the association between one’s own executive dysfunction and one’s partner’s outcomes of dating aggression perpetration,
the main findings of this study are that (3) male updating difficulties contribute to female outcomes of psychological aggression perpetration. In addition, the current study also examined the relative contributions of executive dysfunction to subtypes of dating aggression, with findings generally showing support for (4) stronger associations for females’ executive dysfunction with physical aggression outcomes in comparison to psychological and sexual dating aggression when consistency of findings are considered, and (5) stronger contributions of male executive dysfunction to outcomes of male sexual aggression perpetration in comparison to physical and psychological aggression. Across these findings, gender and the indicator of executive dysfunction that was utilized may have impacted results. Thus, this study provides directions for future research to further clarify and replicate these conclusions. Together, the implications of the current study suggest that executive dysfunction is a meaningful correlate of dating aggression. For this reason, future dating aggression research and clinical interventions may be enhanced by incorporating executive dysfunction into dating aggression intervention and prevention models.
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APPENDIX A

Consent Forms
Informed Consent to Participate in a Research Study - Participant

Study Title: Cognitive Functioning within Late Adolescents' Romantic Relationships
Principal Investigator: Manfred H. M. van Dulmen
Co-Investigators: John Dunlosky
                   John Gunstad
                   Christopher A. Was

You are being invited to participate in a research study. This consent form will provide you with information on the research project, what you will need to do, and the associated risks and benefits of the research. Your participation is voluntary. Please read this form carefully. It is important that you ask questions and fully understand the research in order to make an informed decision. You will receive a copy of this document to take with you.

Purpose: We are interested in romantic relationships and how experiences in romantic relationships are related to your past relationships and current cognitive functions. We want to do this study because we would like to learn about how relationships with partners (boyfriends/girlfriends) are impacted by your past interactions with other important people in your life (i.e., parents, peers) and your current cognitive functioning. We would like you to take part in this project.

Procedures: Today’s visit will take approximately four hours. You will first fill out a packet of 17 questionnaires about important relationships in your life. Next, you will be asked to complete a series of 10 paper-and-pencil and computerized surveys that will measure cognitive functioning. We also would like to videotape you and your partner completing 4 tasks together.

Video Recording: We would like to video-tape you during 4 tasks that you will complete with your partner. These DVDs will be stored in a locked filing cabinet after your participation today and will only be accessible to project personnel. We are also requesting, with your permission, to use these DVDs in training or for presentation at a professional meeting. You will be given the option of viewing your DVD prior to agreeing for us to use your tape for any of these purposes. You will sign a separate consent form agreeing to video-taping.
Benefits: Your participation in this study will help us better understand the role of interpersonal relationships during young adulthood.

Risks and Discomforts: We do not anticipate any serious risks, but some of our research involves material of a personal nature, including some questions about your sexual behavior. Some of the questions we ask may be upsetting or you may feel uncomfortable answering them. If you do not wish to answer a question, you may skip it and go on to the next question. Should you feel upset after completing this study, please be aware that talking to someone can help you. There are several resources on campus, including:

Department of Psychology’s Psychological Clinic Kent Hall 330-672-2372
Counseling and Human Development Center White Hall 330-672-2208
University Health Services Psychological Center DeWeese 330-672-2487

Privacy and Confidentiality: All of the information in these sessions will be kept confidential. Each participant will be assigned an ID number to insure confidentiality, and neither you nor your partner’s name will ever appear on documents or publications from this project. Your study related information will be kept confidential within the limits of the law. Any identifying information will be kept in a secure location and only the researchers will have access to the data. Research participants will not be identified in any publication or presentation of research results; only aggregate data will be used. Confidentiality may not be maintained if you indicate that you may do harm to yourself or others.

Compensation: You will receive 8 research credits for your psychology course for your participation today.

Voluntary Participation: Taking part in this research study is entirely up to you. You may choose not to participate or you may discontinue your participation at any time without penalty or loss of benefits to which you are otherwise entitled. You will be informed of any new, relevant information that may affect your health, welfare, or willingness to continue your study participation. Choosing to participate or not participate will not affect your course grade.

Contact Information: If you want to know more about this research project, please call Dr. Manfred van Dulmen at (330) 672-2503. The project has been approved by Kent State University. If you have any questions about your rights as a research participant or complaints about the research, you may call the IRB at 330.672.2704.

Consent Statement and Signature: I have read this consent form and have had the opportunity to have my questions answered to my satisfaction. I voluntarily agree to participate in this study. I understand that a copy of this consent will be provided to me for future reference.

Signature______________________________ Date________________________
Informed Consent to Participate in a Research Study - Partner

Study Title: Cognitive Functioning within Late Adolescents' Romantic Relationships
Principal Investigator: Manfred H. M. van Dulmen
Co-Investigators: John Dunlosky
John Gunstad
Christopher A. Was

You are being invited to participate in a research study. This consent form will provide you with information on the research project, what you will need to do, and the associated risks and benefits of the research. Your participation is voluntary. Please read this form carefully. It is important that you ask questions and fully understand the research in order to make an informed decision. You will receive a copy of this document to take with you.

Purpose: We are interested in romantic relationships and how experiences in romantic relationships are related to your past relationships and current cognitive functions. We want to do this study because we would like to learn about how relationships with partners (boyfriends/girlfriends) are impacted by your past interactions with other important people in your life (i.e., parents, peers) and your current cognitive functioning. We would like you to take part in this project.

Procedures: Today’s visit will take approximately four hours. You will first fill out a packet of 17 questionnaires about important relationships in your life. Next, you will be asked to complete a series of 10 paper-and-pencil and computerized surveys that will measure cognitive functioning. We also would like to videotape you and your partner completing 4 tasks together.

Video Recording: We would like to video-tape you during 4 tasks that you will complete with your partner. These DVDs will be stored in a locked filing cabinet after your participation today and will only be accessible to project personnel. We are also requesting, with your permission, to use these DVDs in training or for presentation at a professional meeting. You will be given the option of viewing your DVD prior to agreeing for us to use your tape for any of these purposes. You will sign a separate consent form agreeing to video-taping. You will be mailed a copy of the DVD.
**Benefits:** Your participation in this study will help us better understand interpersonal relationships during young adulthood.

**Risks and Discomforts:** We do not anticipate any serious risks, but some of our research involves material of a personal nature, including some questions about your sexual behavior. Some of the questions we ask may be upsetting or you may feel uncomfortable answering them. If you do not wish to answer a question, you may skip it and go on to the next question. Should you feel upset after completing this study, please be aware that talking to someone can help you. There are several resources on campus, including:

- Department of Psychology’s Psychological Clinic  Kent Hall  330-672-2372
- Counseling and Human Development Center  White Hall  330-672-2208
- University Health Services Psychological Center  DeWeese  330-672-2487

**Privacy and Confidentiality:** All of the information in these sessions will be kept confidential. Each participant will be assigned an ID number to insure confidentiality, and neither you nor your partner’s name will ever appear on documents or publications from this project. Your study related information will be kept confidential within the limits of the law. Any identifying information will be kept in a secure location and only the researchers will have access to the data. Research participants will not be identified in any publication or presentation of research results; only aggregate data will be used. Confidentiality may not be maintained if you indicate that you may do harm to yourself or others.

**Compensation:** You will receive $35 for your participation today.

**Voluntary Participation:** Taking part in this research study is entirely up to you. You may choose not to participate or you may discontinue your participation at any time without penalty or loss of benefits to which you are otherwise entitled. You will be informed of any new, relevant information that may affect your health, welfare, or willingness to continue your study participation. Choosing to participate or not participate will not affect your course grade.

**Contact Information:** If you want to know more about this research project, please call Dr. Manfred van Dulmen at (330) 672-2503. The project has been approved by Kent State University. If you have any questions about your rights as a research participant or complaints about the research, you may call the IRB at 330.672.2704.

**Consent Statement and Signature:** I have read this consent form and have had the opportunity to have my questions answered to my satisfaction. I voluntarily agree to participate in this study. I understand that a copy of this consent will be provided to me for future reference.

Signature: _______________________________ Date: _________