

Ego Identity and Relational and Social Aggression Mediated by Elaborative and Deep Processing

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Abstract: In this investigation, late adolescents' (N = 629) ego identity status (e.g., identity achievement, identity diffusion, identity moratorium, and identity foreclosure), cognitive processing style, and self-reported use of relational aggression and social aggression were measured in order to assess potential relationships among these constructs. Four separate models were used to test these hypotheses, and the results showed support for some but not all the four hypotheses. In this sample, it appears that individuals with high levels of cognitive sophistication who lack social maturity by which to resolve relationship problems were more likely to use social aggression than those with lower levels of cognitive processing skills or with higher levels of emotional maturity.

Keywords: Ego identity, relational aggression, social aggression, deep processing, elaborative processing.

INTRODUCTION

There have been many different ideas about the way individuals develop more complex learning and thinking strategies that affect the way that they behave both academically and socially. Some of the earlier ideas held that cognitive growth mirrored biological development and as individuals aged, their styles of thinking and acting matured in a relatively automatic manner (Inhelder & Piaget, 1958). Later, theories arose that stressed mechanisms other than simply biological development as important in understanding cognitive growth. Craik and Lockhart (1972) argued that in order for the new information to be successfully remembered and integrated into an individual's store of useful knowledge over a long period of time, an individual must first actively participate in a "depth of processing" where greater 'depth' implies a greater degree of semantic or cognitive analysis" (Craik & Lockhart, 1972, p. 675). This depth of processing was correlated with an individual's age and generally began to occur around late adolescence, but depth of processing skills can be explicitly taught and learned and can therefore be developed separate from simple biological development (Schunk, 2005).

Schmeck and Ribich (1978) took the idea of deep processing a step further in their research and analysis that resulted in the Inventory of Learning Processes. These theorists thought that two important cognitive activities that are vital for successful learning are deep

processing and elaborative processing. Deep processing was defined as an individual's willingness to put forward the necessary attention and effort to categorize the new information while elaborative processing occurred when an individual compared new information to already held personal experiences (Schmeck & Ribich, 1978). These two similar but distinct processes can occur separately or simultaneously in individuals and are each responsible for different learning and social outcomes.

The majority of the research surrounding this theory of deep and elaborative processing revolves around academic functioning. In one example, Gadzella and Baloglu (2003) used the Inventory of Learning Processes to compare the processing styles in high achieving and low achieving undergraduates. They found that high achieving students had higher rates of deep and elaborative processing than low achieving students, although the results were not statistically significant (Gadzella & Baloglu, 2003). However, cognitive processing style has also been shown to affect other important factors.

One such line of research attempts to describe how cognitive processing style affects ego identity formation. Erikson's (1956) theory of the stages of ego identity development has stimulated a large amount of research. According to his theory, each individual must work through eight distinct ego development stages that each involve their own unique crisis that they must overcome. How the individual resolves, or fails to resolve, those crises impacts how content and satisfied that person will feel about their life. Marcia (1966) attempted to explain Erikson's adolescent stage of

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identity vs. role confusion even further. He proposed that individuals in this stage could be experiencing one of four different identity statuses: (1) identity achievement, (2) identity diffusion, (3) identity moratorium, and (4) identity foreclosure. In the achievement stage, persons have experienced some crisis and have successfully resolved that crisis allowing them to have confidently decided who they are, and are committed to living their life in accordance with their newly established goals and values. This is the status that each person is hoping to achieve but not all people do. The direct opposite of identity achievement is identity diffusion. In the diffusion stage, an individual has not experienced a crisis where they question who they are and what they believe and have not become committed to any particular path (Marcia, 1966; Read, Adams, & Dobson, 1984; Schiedel & Marcia, 1985). People who are in the moratorium stage have experienced an identity crisis but the crisis has not been resolved successfully. These individuals are still uncertain about what they believe and have not yet committed to a particular lifestyle. Finally those who are in the foreclosure stage have not experienced an identity crisis but have already become committed to a certain set of beliefs and goals (Marcia, 1966; Read *et al.*, 1984; Schiedel & Marcia, 1985).

Cognitive abilities have been shown to greatly affect the development of an individual's ego identity status. Some have argued that a successful resolution of the identity crises is not possible without more sophisticated cognitive processing styles (Adams, 1977; Boyes & Chandler, 1992; Krettenauer, 2005). This line of thinking claims that before Piaget's stage of formal operational thought has been attained, an adolescent is largely egocentric. Since an egocentric individual is largely incapable of fully understanding that other people's thoughts and goals are different than their own they do not have the information necessary to process through where they should fit into a society and are unable to commit to an appropriate lifestyle.

Berzonsky (2008) found that those individuals who are most successful at processing through their ego identity crises and developing a positively attained committed identity were most likely to use some form of effortful processing skills that closely match Schmeck and Ribich's (1978) definitions of deep and elaborative processing. Similarly, Adams (1998) also contended that individuals' cognitive development parallels their ego identity formation. Findings such as these suggest that by understanding an individual's, particularly an

adolescent's, cognitive processing style and capabilities, one can accurately predict that person's level of ego identity development.

Beyond ego development, individuals' reasoning and cognitive processing are connected to their behaviors, including their aggressive behaviors (Huesmann, 1998). Crick and Dodge (1994) developed the social information processing theory that explains five different cognitive steps that lead to either socially acceptable peer interactions or aggressive behavior. These five steps include such cognitive events as encoding and interpreting external cues as well as determining the individual's own goals for social interaction. By successfully processing through each of the steps in the theory, individuals can develop a measure of social competence and skill but if that individual processes through the steps in a manner wrought with their own biases or misinterpretations, they can decide to act aggressively (Crick & Dodge, 1996). While this theory does stress the importance of cognitions in social interactions, initial beliefs about the process was that these cognitions were largely subconscious and automated (Crick & Dodge, 1994).

Others, however, have suggested that deeper, more effortful processing may be a part of social decision making. One study found that some aggressive individuals act more impulsively without fully processing through their behavior (Peeters, Cillessen, & Scholte, 2010). This finding may suggest that deep and elaborative processors would be more successful at avoiding aggressive behavior. Arsenio, Adams, and Gold (2009) also examined the relationship between cognitive abilities and aggression. They determined that those individuals with the most developed cognitive skills were most likely to participate in proactive aggression that involved planning and forethought while less cognitively developed students were more likely to be involved in reactive aggression that occurred more impulsively. These results suggest that both deep processors and shallow processors participate in aggressive acts but that their forms of aggression may be different.

Recent research has been able to describe several different types of aggression present in the student population. One of the broadest distinctions in aggression is between direct and indirect aggression. Direct aggression occurs when the aggressor confronts their victim face to face and does immediate harm that may include physical aggression (e.g., hitting, kicking) or verbal aggression (e.g., name calling, insulting

intelligence) (Richardson & Green, 2006; Griffin & Gross, 2004; Olweus, 1993). Indirect aggression, on the other hand, occurs without the victim's initial knowledge as the aggressor goes behind the victim's back to cause harm. Quickly, however, the victim becomes aware of the aggression, generally through social exclusion (Spears, Slee, Owens, & Johnson, 2005). Direct aggression appears to best match Arsenio *et al.*'s (2009) description of reactive aggression which involves less developed cognitive skills while indirect aggression would seem to be associated with deeper levels of processing.

Indirect aggression has been divided further into two specific types of aggression; social aggression and relational aggression (Spears *et al.*, 2005). Social aggression occurs when the aggressor attempts to affect the victim's social standing by involving other people in the victim's peer group (Richardson & Green, 2006). The aggressive behaviors pertaining to social aggression can be expressed through verbal means, nonverbal gestures, rumors, or social rejections (Galen & Underwood, 1997). The perpetrators' intention is to hurt the target's social status while maintaining the perpetrators' self-esteem and control over their own social standing (Archer & Coyne, 2005; Crothers, Schreiber, Field, & Kolbert, 2009; Underwood, 2003).

Unlike in social aggression where the aggressor attempts to affect the victim's standing in entire peer groups, in relational aggression, the aggressor uses their own relationship with the victim as the method for gaining compliance (Archer & Coyne, 2005). Aggressors use relational aggression as a way to gain control, upset social ties or companionships, or pursue specific objectives of manipulating relationships (Archer & Coyne, 2005; Crothers *et al.*, 2009). Relational aggression does not have to be completed covertly and face to face statements such as "we will not be friends anymore unless..." are common for relationally aggressive individuals (Coyne, Archer, & Eslea, 2006). Understanding how processing style affects the rates of both social and relational aggression could help in providing effective interventions for aggressive students at school.

There is no research that offers information that discusses the direct relation between ego identity and aggression. Podd's (1972) study examined the relations between ego identity status and moral judgement. Similarly, Read *et al.*'s (1984) study delineates the four ego identity statuses that relate to social influence styles. Furthermore, Megargee (1965)

used barrier scores (an index of ego identity) to assess aggressive behaviors of juvenile delinquents.

The current research study hopes to investigate the relationship between these three important factors; cognitive processing style, ego identity status, and aggression. We will be testing for distinct hypotheses in hopes of better understanding how these three factors interact with each other: a) elaborative processing mediates the relation between the task of identify formation and relational aggression b) elaborative processing mediates the relation between the task of identify formation and social aggression c) deep processing mediates the relation between the task of identify formation and relational aggression d) deep processing mediates the relation between the task of identify formation and social aggression.

METHODS

Participants

Students enrolled in introductory classes in human development and educational psychology at a state university in the mid-Atlantic United States were invited to participate in the study, yielding a sample of 666 college students. After eliminating protocols with missing information, a total sample of 629 students ($M_{age} = 20.2$ years) provided data for the current study. Please see Table 1 for a demographic description of the sample.

Procedure

Researchers of the study visited each of the human development and educational psychology classes, taught by professors not affiliated with the investigation, providing students with information about the nature of the study and the requirements for student participation. Students were presented with the option to participate in the study as part of their course and thereby earn extra credit points, an assignment pass, etc. by doing so. Students who chose not to participate could also earn such benefits through completing an extra classroom assignment.

The researchers administering the data protocol verbally explained to all participants the practices regarding confidentiality and the confidentiality policy highlighted on the Participant Consent Form. Confidentiality was further maintained by asking that students not report their names on any material associated with the study.

Table 1: Description of the Sample

Categories	Sub-categories	Percentage of the Sample
Sex	Male	34%
	Female	66%
Race/Ethnicity	Caucasian	91.6%
	African-American	2.8%
	Asian/Pacific Islander	1.1%
	Latino	.6%
	Biracial	.3%
	Multiracial	.6%
	Other	1.7%
Grade Level	Freshmen	32%
	Sophomores	26%
	Juniors	29%
	Seniors	8%
Sexual Orientation	Heterosexual	97.7%
	Lesbian or Gay	.8%
	Bisexual	1.2%
	Other	.3%

Note: $N = 629$.

Instruments

The Inventory of Learning Processes – Revised (ILP-R)

The Inventory of Learning Processes – Revised is an instrument designed to assess individuals' learning styles. The measure includes 160 items using a 6-point Likert scale with agree-disagree as the anchors, and measures the constructs of intrinsic motivation, self-efficacy, non-reiterative processing, self-esteem, reflective processing, elaborative processing, self-expression, agentic processing, conventionality, serial processing, face retention, and methodical study. Moreover, there are four major dimensions on the ILP-R: academic self-concept, reflective processing, agentic processing, and methodological study. Reflective processing is comprised of deep and elaborative processing (Schmeck, Geisler-Brenstein & Cery, 1991).

According to the authors of the ILP-R, deep processing is "primarily integrative in nature, deriving conclusions by dialectically contrasting opposing perspectives" (Schmeck *et al.*, 1991, p. 394). Deep processing appears to embody aspects of formal operational thought, as described by Piaget (1961), and includes items such as, "I like to play around with ideas of my own even if they don't seem to get me very

far," and "I usually refer to several sources in order to understand a concept." Furthermore, elaborative processing "involves self-reference, essentially encoding new information in terms of personal metaphor and personal vocabulary" (Schmeck *et al.*, 1991, p. 394). Examples of elaborative processing include, "In trying to understand new ideas, I often try to relate them to real life situations to which they might apply," and "I remember new words and ideas by imagining a situation in which they might occur."

The reliability of the deep and elaborative processing subscales of the ILP has been measured through estimates of their internal consistency. The internal consistency of deep processing has been measured at $\alpha = .84$, and at $\alpha = .86$ for elaborative processing (Schmeck *et al.*, 1991). Studies have found good evidence for construct validity and structural validity of the ILP based upon factor-analysis (Schmeck & Ribich, 1978; Schmeck, Ribich, & Ramanah, 1977), as well as cross-validation with international samples (Kozminsky, 1988).

The Objective Measure of Ego-Identity Status (OMEIS-2)

The Objective Measure of Ego-Identity Status (OMEIS-2 [Revision]; Bennion & Adams, 1986) is a 64-item, self-report instrument based on an Eriksonian

model of identity development and Marcia's ego-identity statuses (Marcia, 1966), which assesses ego-identity status. It is the only quantitative instrument available to measure ego-identity. Ego-identity is analyzed according to Marcia's four identity statuses (identity achievement, moratorium, foreclosure and diffusion) and two separate categories (ideological and interpersonal) creating eight total subscales (e.g., Ideological-Identity Achievement, Ideological-Moratorium, Ideological-Foreclosure, Ideological-Diffusion, etc.). The two overarching identity categories: ideological (politics, religion, occupation and philosophy; values and beliefs) and interpersonal (sex roles, friendship, dating, hobbies/interests) are each assessed with 32 prompts. Potential responses to each prompt range from strongly disagree (1) to strongly agree (6). High scores on this instrument indicate an endorsement of behaviors that are consistent with one of the identity statuses.

The concurrent and construct validity of the OMEIS-2 has been demonstrated for high school and college populations (Adams, 1998; Bennion & Adams, 1986). The reference manual for the OMEIS-2 boasts twenty different studies, including O'Connor (1995), who found Cronbach alphas between .65 – .83 indicating moderate to high levels of reliability. In terms of concurrent validity, the Marcia Ego Identity Interview is regarded as a valid measure of ego identity and there are studies which indicate that there is moderate to strong agreement between the OMEIS and ratings on the Marcia Ego Identity Interview (e.g., Adams, Shea & Fitch, 1979).

Young Adult Social Behavior Scale (YASB)

The YASB measures self-reported healthy and maladaptive behaviors in friendships or relationships. Since relational aggression may encompass a range of emotionally hurtful behaviors, 14 items represent a definition of relational aggression that includes both socially aggressive and direct relationally aggressive behaviors and a number of items representing healthy social skills (Crothers, Schreiber, Field, & Kolbert, 2009). Sample YASB items include: *When I am angry with someone, that person is often the last to know*; *When I am frustrated with my partner/colleague/friend, I give that person the silent treatment*; and *I intentionally exclude friends from activities to make a point with them*. Confirmatory factor analyses supports that the YASB measures three internally consistent constructs, relationally aggressive behaviors, socially aggressive behaviors, and interpersonally mature

behaviors. The internal consistency of each factor exceeds .70, indicating satisfactory reliability levels. For this sample, the internal consistency for the three subscales of YASB was as follows: .76 for relational aggression, .77 for social aggression, and .73 for interpersonal maturity.

RESULTS

The objective of the study was to investigate whether cognitive processing styles mediate the relationships between ego identity status and relational and social aggression. In order to answer this question, mediation analysis was performed using data collected through the administration of The Objective Measure of Ego-Identity Status (OMEIS-2; Bennion & Adams, 1986), the Inventory of Learning Processes-Revised (ILP-R; Schmeck, Geisler-Brenstein & Cercy, 1991), and the Young Adult Social Behavior Scale (YASB; Crothers, Schreiber, Field, & Kolbert, 2009). Specifically, mediation analysis was conducted to test the following four research questions:

- (a) Does elaborative processing mediate the relation between the task of identify formation and relational aggression.
- (b) Does elaborative processing mediate the relation between the task of identify formation and social aggression.
- (c) Does deep processing mediate the relation between the task of identify formation and relational aggression.
- (d) Does deep processing mediate the relation between the task of identify formation and social aggression.

To test each of these hypotheses, mediation analysis was conducted using *MEDIATE* (Preacher & Hayes, 2008), an SPSS macro program that estimates the total, direct, and indirect effects of causal variables on the outcome variable through a proposed mediator variable or set of mediator variables (Preacher & Hayes, 2008). The results are organized according to the research questions tested in this study. The diagrams representing the models for the four research questions are presented in the appendix.

The results as indicated in Table 2 showed support for two of the four research questions. Results for the first research question revealed that the model was not significant; indicating that elaborative processing did

Table 2: Model Summary

	<i>R</i>	<i>R</i> ²	<i>F</i>	<i>p</i>
Research Question 1	.12	.02	1.72	.0813
Research Question 2	.20	.04	4.61	.0000*
Research Question 3	.12	.02	1.78	.0688
Research Question 4	.20	.04	4.55	.0000*

*Significant at .001.

not mediate the relation between the task of identity formation and relational aggression. For research question 2, elaborative processing significantly mediated the relation between the task of identity formation and social aggression, $R = .20$, $R^2 = .04$, $F_{(9, 1043)} = 4.61$, $p < .001$. A closer look revealed that only ideological diffusion was negatively related to social aggression as mediated by elaborative processing, accounting for about 4% of the variance. The model for the third research question was not significant, indicating that deep processing did not mediate the relation between the task of identity formation and relational aggression. For the fourth research question we found that deep processing significantly mediated the relation between the task of identity formation and social aggression, $R = .20$, $R^2 = .04$, $F_{(9, 1043)} = 4.55$, $p < .001$. Just like in the second model, ideological diffusion displayed a significant negative relation with social aggression as mediated by deep processing, accounting for about 4% of the variance. In summary, in this sample, it appears that individuals with high levels of cognitive sophistication who lack social maturity by which to resolve relationship problems were more likely to use social aggression than those with lower levels of cognitive processing skills or with higher levels of emotional maturity.

DISCUSSION

In this study, a mediation analysis was used to investigate the relation between late adolescents' ($N = 629$) ego identity status (e.g., identity achievement, identity diffusion, identity moratorium, and identity foreclosure), cognitive processing style (deep processing and elaborative processing), and the self-reported use of relational aggression and social aggression. Of the four research questions proposed, two research questions did not reach significance: elaborative processing did not mediate the relation between the task of identity formation and relational aggression; neither did deep processing mediate the relation between the task of identity formation and relational aggression.

However, two research questions were supported by statistically significant results. Elaborative processing significantly mediated the relationship between identity formation and social aggression; specifically, only ideological diffusion was negatively related to social aggression as mediated by elaborative processing. Furthermore, deep processing was found to significantly mediate the relationship between identity formation and social aggression; again, only ideological diffusion specifically, as mediated by deep processing, was significantly negatively related to social aggression.

Since the YASB is reverse scored, the findings of this study suggest that when individuals who have a high level of ideological diffusion use elaborative or deep processing, they are more likely to use social aggression in their relationships. Interestingly, the same was not true of relational aggression, again providing statistical distinction between these constructs on the YASB (Crothers *et al.*, 2009). In summary, in this sample, it appears that individuals with a high level of cognitive sophistication who lack the psychosocial maturity by which to resolve relationship problems were more likely to use social aggression than those with lower levels of cognitive processing skills or who were more advanced in their ideological identity status. In contrast, elaborative and deep processing did not mediate the relation between relational aggression and interpersonal identity status.

The results appear to support the contention of some (Adams, 1977; Boyes & Chandler, 1992; Krettenauer, 2005) that cognitive development precedes identity formation. Crothers *et al.* (under review) found that there was a stronger relationship between social aggression and elaborative and deep processing than there was for relational aggression. These researchers argued that social aggression may require a higher level of cognitive complexity, since the focus of the social aggression is to manipulate the social status of the intended target, requiring the perpetrator to consider the perspectives of the victim and the various members of the social group. In

contrast, in relational aggression the intention of the aggressor is to gain power within a dyadic relationship, and relational aggression involves some fairly unsophisticated strategies, such as threatening to end the relationship, avoiding the other, etc. It can be argued that late adolescents/young adults who have acquired more advanced forms of cognitive processing, namely elaborative and deep processing, but who have not developed a value structure for guiding their interpersonal relations, particularly their relations within the peer group context, are more likely to use social aggression. In other words, these individuals can now recognize and use this more sophisticated form of aggression, and still lack the political and moral values that would constrain their use. The work of Kohlberg and his colleagues (Kohlberg & Kramer, 1969; King & Mayhew, 2002) revealed that college is necessary for the acquisition of principled forms of moral reasoning, although many college students and graduates do not use principled forms of moral reasoning on a consistent basis. The college environment both encourages students to develop more advanced cognitive processes and reflect upon the nature of social relations. College students who acquire abstract values such as justice and fairness may be less likely to use social aggression, in contrast to those college students who have the capacity for deep and elaborative processing but who have not advanced in their development of political and social ideals.

A related argument may explain the fact that both elaborative and deep processing mediated the relation between social aggression and ideological identity, but did not mediate the relation between relational aggression and interpersonal identity. Relational aggression may not require advanced forms of cognitive reasoning or reflection, and even pre-school aged children have been found to use relational aggression (e.g., Morine *et al.*, 2011).

Both elaborative and deep processing mediated the relation between ideological identity but did not mediate the relation between interpersonal identity and social aggression. Ideological identity in Marcia's framework includes political and philosophical life-style values, goals, and standards, whereas interpersonal identity includes aspects of friendship and sex roles. It can be argued that ideological identity is related to more abstract principles regarding interpersonal relations, and concerns how others should relate within the context of a group, rather than the context of a dyadic relationship. Aggression within a dyadic relationship may be more governed by the implicit and explicit rules

established by the relationship participants rather than being based on the abstract concepts that guide the reasoning and behavior of more psychologically mature late adolescents/young adults. In other words, since children establish rules regarding interpersonal relations at a younger age, prior to establishing their understanding of rules for relations in larger social contexts, the rules for reasoning about dyadic relationships may be less driven by sophisticated cognitive processes, and more by behaviors acquired at a younger age.

Study Limitations and Future Studies

This is the first known study to examine the relationships among ego identity status, deep and elaborative processing, and social and relational aggression. However, unknown is the extent to which the present results may be generalized to other populations. The current participants were limited to undergraduate college students, a group that may not be a representative sample of all potential human participants. Future studies should seek to understand the relationships among this study's variables across the lifespan, and not simply during young adulthood. Furthermore, within the young adult age-range, future studies might also recruit participants who are not college students. It remains possible that college students may have a greater range of cognitive strategies to access when navigating social situations, and may have greater social maturity as a group. Also possible is that college students may differ from other young adults not attending college in the distribution of ego identity categories achieved. The present participants may arguably be more likely to have successfully achieved an ego identity by the nature of their commitment to post-secondary education and a career path.

Another limitation of this study is that the sample was relatively homogenous with respect to racial/ethnic background and ostensibly socio-economic status. Future studies should seek to expand beyond Caucasian participants and include participants of lower socio-economic status. Finally, results should be interpreted with caution when self-report measures are used in social science research, and particularly when participants must self-report on his or her own negative behavior. Although not suspected in the present study due to the anonymous nature of the data collection procedures, participants may be motivated to under-report negative behavior out of the desire to maintain social desirability. Likewise possible is that participants

may lack the insight to accurately rate their own negative behavior. Future studies might consider the use of peer sociometric strategies (e.g., peer

nomination) as an additional source of information to establish those participants that use social and relational aggression.

APPENDIX

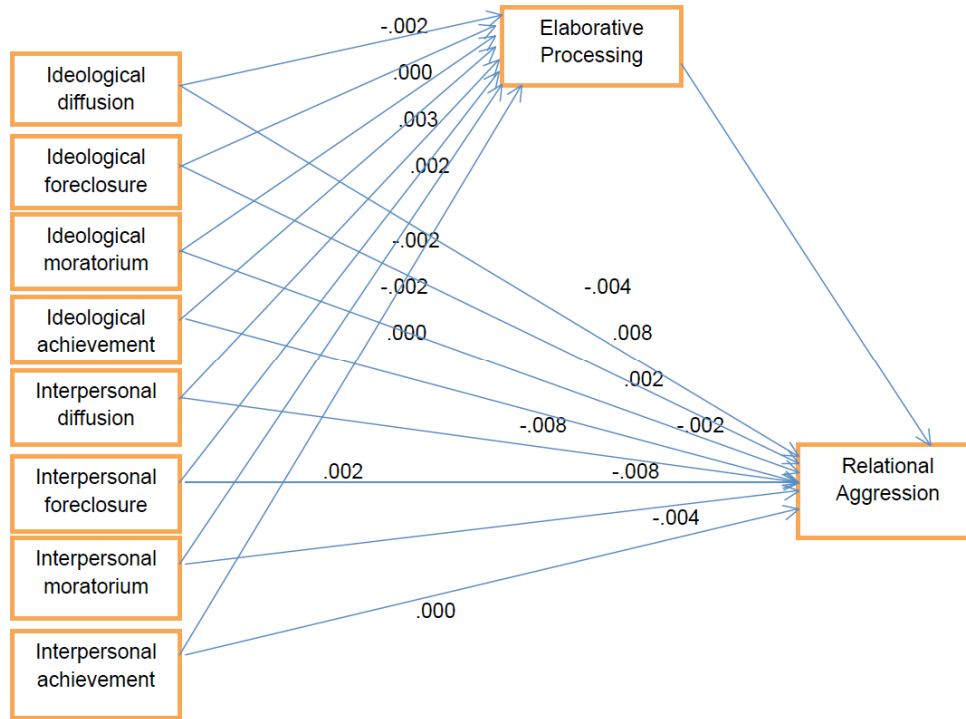
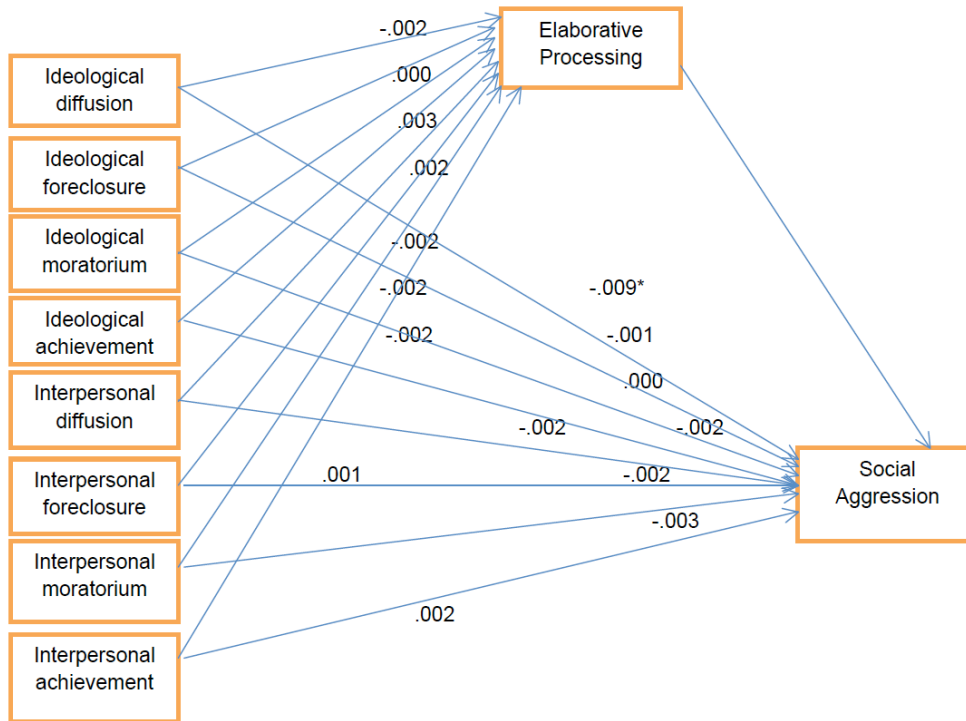


Figure 1: Elaborative processing mediates the relation between the task of identify formation and relational aggression.



*Significant at 0.05

Figure 2: Elaborative processing mediates the relation between the task of identify formation and social aggression.

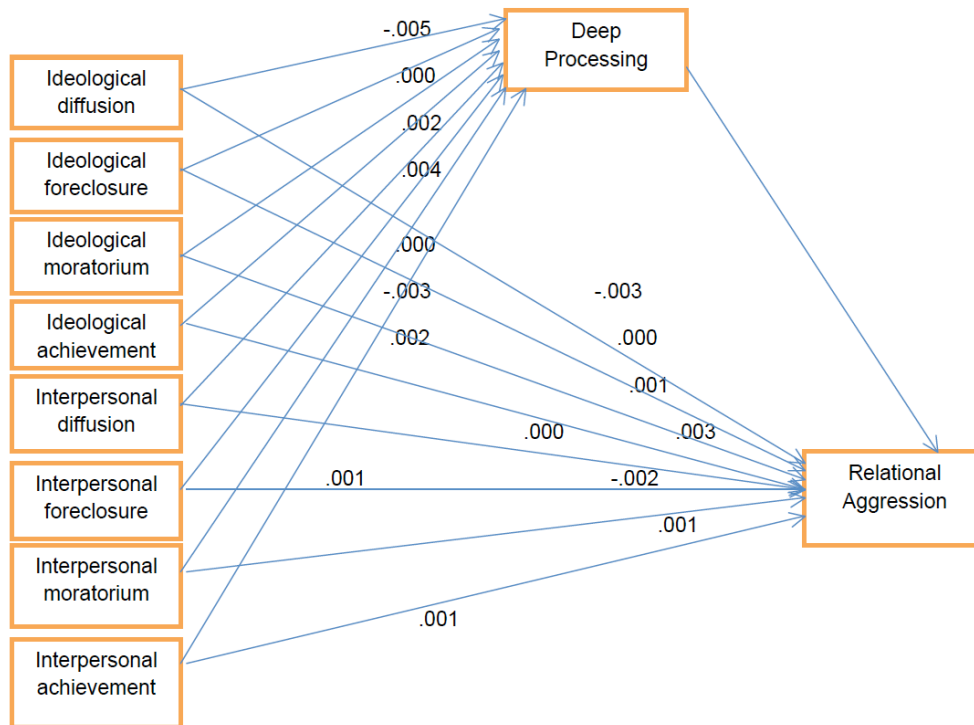
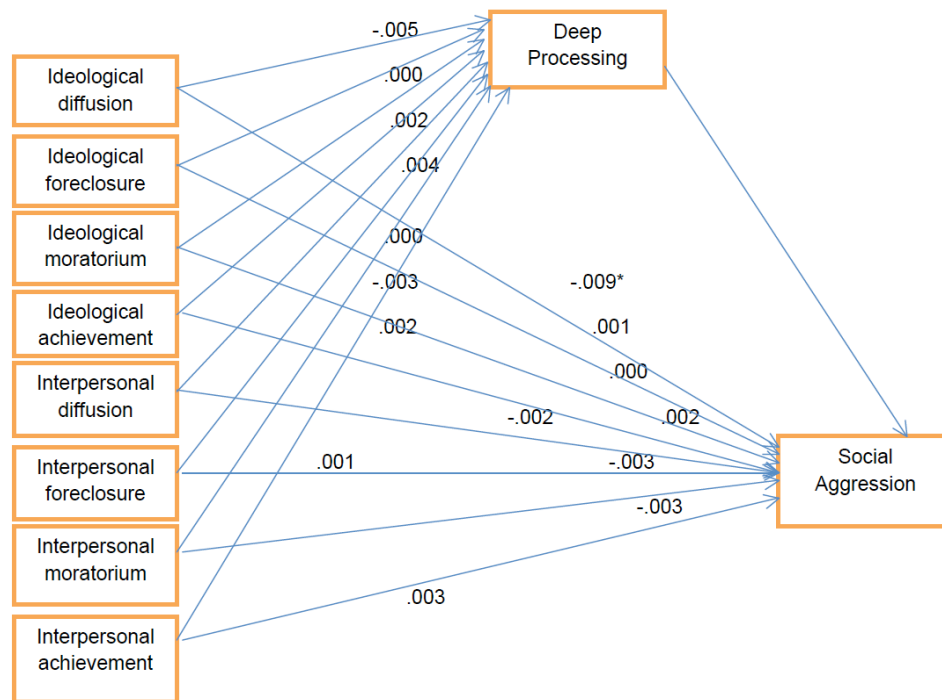


Figure 3: Deep processing mediates the relation between the task of identify formation and relational aggression.



*Significant at 0.05

Figure 4: Deep processing mediates the relation between the task of identity formation and social aggression.

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