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Social Information Processing and Reactive and Proactive Aggression among Children with ADHD

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Abstract

This study examined the social information processing qualities among children with reactive and proactive aggression among children with Attention Deficit Hyperactive Disorder (ADHD). It enrolled a total of 112 Saudi school children (62 boys, 50 girls; mean age = 9.26 years, SD = 1.98) of which 51 were diagnosed with ADHD and 61 typically developing peers. Data on children's social informational processing and type of aggression displayed were gathered and analyzed for group differences by diagnosis and gender within diagnosis. Findings suggest gaps in social information processing and elevated aggression levels among children with ADHD compared to typical others. Male children with ADHD to present mostly with proactive aggression and self-serving information processing. Female ADHD were characterized by reactive aggression and selective information processing. Implicit socialization processes might explain the differences in social information processing and type of aggression among male and female students with Arabic culture background.

Keywords: reactive and proactive aggression, social information processing, attention deficit hyperactivity disorder

1. Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is estimated to be between 3-10% of the general Childhood population (Waschbusch & Willoughby, 2008), and is characterized by inattention, impulsivity, hyperactivity (American Psychiatric Association, 2013). These symptoms are observed before the age of seven, must be present for at least six months preceding diagnosis, and displayed in more than one context such home and school. ADHD frequently co-occurs with other psychiatric disorders such as mood, anxiety, substance use, personality, aggression and impulse control disorders (Connor, Steeber, & McBurnett, 2010; American Psychiatric Association, 2013).

1.1 ADHD in Saudi Arabia

Saudi Arabia in its foundation depends on the Islamic Shari'ah, which highlights the necessity of human rights, especially people with disabilities' rights to live with self-respect and assistance from welfare (Abaoud, 2013). As the first piece of legislature passed in 1987 for individuals with disabilities in Saudi Arabia, Legislation of Disability attested that the disabled had equal rights in society. The Legislation of Disability comprises articles that define what a disability is and exemplifies intervention and prevention programs, as well as assessment procedures and diagnoses to aid in the determination of special education services (Alquraini, 2011).

In 1996, the General Secretariat of Special Education commenced the application of programs for students with disabilities throughout Saudi Arabia, regardless of the severity of the disability, in order to establish new educational administrations for these students. The General Secretariat of Special Education identified students who would benefit from special education programs in Saudi Arabia. These include students with visual and auditory impairment, along with learning disabilities, emotional and behavior disturbances, speech and language impairments, mental retardation, autism, ADHD, or multiple disabilities were among the beneficiaries. With the exception of traumatic brain injury, these disability branches are basically identical to the ones cited in the United States' IDEA (Al-Hamli, 2008).

Also, the Saudi education has given attention to ADHD area. In 2008, Saudi Arabia issued a royal decree for the national ADHD initiative, Calling the key partners in the care of children with ADHD to work together to create a supportive environment that guarantees them access to the services they require to safeguard their rights and enable them to succeed (AFTA Saudi ADHD Society, 2015).

The prevalence of combined ADHD in Saudi Arabia was found to be 16.4%, where 12.4% hyperactivity-impulsivity and 16.3% inattention disorders (Al Hamed, 2008). Moreover, in two studies conducted in Saudi Arabia to elaborate prevalence of ADHD among primary school students revealed that the prevalence ranged between 12.6% in Riyadh, and 16.4% in Dammam (Bener, Qahtani, & Abdelaal, 2006).

Farah et al. (2008) found children with ADHD rates in Arab populations were similar to those in other cultures, According to the Arab; results in all Arab studies in (i.e., Kingdom of Saudi Arabia, United Arab, Lebanon, Qatar) reporting on gender differences showed that the prevalence rate of ADHD was higher in males than in females with ratios varying from 2:1 to 3:1, which is compatible with the international literature on ADHD in both epidemiological and clinical samples.

There is an important need for research on ADHD in the Saudi Arabia, not only to assess the national prevalence in children and adolescents, but also to look at the differential burden and treatment of this disorder, which has high levels of mental comorbidities and high impact across the life span.

1.2 Aggression in Children with ADHD

Two types of aggression are associated with ADHD: reactive and proactive (Little, Jones, Henrich, & Hawley, 2003). Reactive aggression is an angry, defensive response to threat, frustration, or perceived provocation (Pouw, Rieffe, Oosterveld, Huskens, & Stockmann, 2013). By contract proactive aggression is associated with predatory attacks on peers to boost social standing (Oostermeijer, Nieuwenhuijzen, van de Ven, Popma, & Jansen, 2016).

It is a form of aggression aimed to manipulate others while hiding the negative intentions of others (Salmivalli & Nieminen, 2002).

Reactive aggression appears to be strongly associated with ADHD than other types of aggression (King & Waschbusch, 2010), as children with this disorder may miss critical social information in responding to others from their inattentiveness (Waschbusch, 2002; King & Waschbusch, 2010). Social Information Processing (SIP) deficits associated with reactive aggression among children include a gap in: (1) encoding of social cues; (2) interpretation of social cues; (3) clarification of goals; (4) response access or construction; (5) response decision; and (6) behavioral enactment (Crick & Dodge, 1994). For example, children with reactive aggression children's experience problems in interpreting others' cues (SIP Step two), especially in ambiguous, provocative situations such as hostile attribution biases (Orobio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2002). Those with proactive aggression are more likely to respond aggressively to a perceived social threat (Dodge & Pettit, 2003). These findings on SIP and reactive and aggressive aggression have been documented in Western settings. The generalizability of the findings to non-Western settings is unknown.

1.3 Aggression in Children with ADHD in Saudi Arabia

In Saudi Arabia, family is the strongest social unit and is the base on which society is built. The Arab family serves as the primary and basic institution in which beliefs, norms, values, and traditions are taught and shared between generations (Patai, 2002). Children are raised according to cultural norms and traditions that are necessary for their developmental milestones (Hattar-Pollara & Meleis, 1995). Any display of disrespectful behavior reflects poorly not only on the individual but, perhaps more importantly, on the family. A child's behavior is considered a direct reflection of parenting within the Arab culture (Al-Azzam, 2011).

The perception of ADHD behavioral symptoms varies considerably across cultures (Parens & Johnston, 2009). Thus, to completely understand how to identify and treat ADHD, it must be studied from within a cultural perspective. Research suggests that—culturally-relevant factors, like beliefs and values regarding child behavior, impact the way members of various ethnic and cultural groups view and respond to problematic behavior in children (Eiraldi, Mazzuca, Clarke, & Power, 2006).

ADHD prevalence in Saudi Arabia society it impacts not only on the child, but also on parents and siblings, causing disturbances to family (Zaki, 2013). The impact of ADHD upon children and their families changes from the preschool years to primary school and adolescence, with varying aspects of the disorder being more prominent at different stages through interferes with a child's ability to perform in school and capacity to develop and maintain social peer relationships (Katragadda, 2007).

ADHD frequently co-occurs with other psychiatric disorders, Research shows that aggression is an important associated feature of ADHD (Connor, 2010). The most significant factors influencing the occurrence of aggression in ADHD Both genetic and environmental contribute to the development of aggressive behavior in ADHD (Ercan, 2014).

Published studies on aggression and its relationship children with ADHD in the Saudi Arabia are scarce despite the fact that this disorder commonly affects school children and adolescents, as well as the implications of such child behavioral problems. Therefore, little is known about childhood behavioral problems for children with ADHD such as aggressive behavioral (Al-Azzam, 2011).

Al Haidar (2003, p. 13) in his review of 416 case records of patients up to 18 years of age who attended a psychiatric clinic at a university hospital in Riyadh, Saudi Arabia reported that 105 (25.5%) were diagnosed as ADHD, either as the only diagnosis 53 (12.7%), or in combination with other psychiatric disorders 53 (12.7%) such as aggression, depression, school failure and dropout, conduct disorders, failed relationships.

In Oman, an adjacent Arab country, a cross-sectional study carried out in 2015 screened 321 Omani school students for ADHD in terms of its comorbidity with learning disabilities, using the short version of the Conners' Teacher Rating Scale (CTRS-28). 30% of the students referred for learning disabilities were reported to have symptoms of ADHD, including conduct problems (24%), hyperactivity (24%) and inattentive passive behaviors (41%). Male students exhibited greater conduct problems and hyperactivity than females (Mamari, Emam, Al-Futaisi, & Kazem, 2015).

This exploratory study sought to replicate and extend the extant knowledge in SIP and type of aggression among children with Arabic culture background and differentiating by gender.

We hypothesized that children with ADHD would differ significantly from the typically developing others in their information processing qualities and aggression with children ADHD showing elevated aggression overall or regardless of type.

In addition, we hypothesized males with ADHD to present with predominantly proactive aggression (and related SIP) whereas females would be mostly with reactive aggression (and related SIP).

Based on the aforementioned literature review the current study aimed to answer the following questions:

- Is there an association between proactive and reactive aggression on one hand and the SIP among children with ADHD?
- Are there differences between children with ADHD and typically developing peers in aggression types and SIP subscales?
- Are there gender differences in aggression types and SIP subscales?

2. Method

2.1 Sample

Participants were 112 Saudi school children (ADHD diagnosis = 51; .64% = girls = 44.64%; mean age = 9.26, SD = 1.98). The diagnosis of ADHD children was done by a specialized center in the city of Najran, Saudi Arabia.

2.2 Procedure

Permission for the study was granted by Faculty of Education, Najran University and the General Administration of Education in Najran. We also obtained the consent of parents and child assent to participate in the study, there was a guarantee of confidentiality of information. The researchers interviewed children individually in regard to their (SIP) (as described below) in quiet areas of the schools. All instruments used were with Arabic version translation. The interviews took approximately 25-30 minutes per child.

2.3 Measures

The Reactive and Proactive Aggression scale (Raine et al., 2006) was utilized to assess reactive and proactive aggression. The scale consists of 23 items designed to differentiate between reactive and proactive aggression, 12 reactive aggression items is (such as: "when the child has been teased or threatened, he gets angry easily and strikes back). And 11 proactive items, (such as: "this child threatens or bullies others in order to get his own way). Items were rated using Likert scale that ranged from 0 (not at all) to 3 (very much). Teachers completed the scale on each of the children. The reliability of scores in the present study was 0.84 for reactive aggression and 0.88 for proactive aggression.

Social Information Processing: we interviewed each of the children utilizing SIP patterns measure (Dodge, 1986; Crick & Dodge, 1994). This measure consists of eight picture stories cartoon, four stories depicted either ambiguous peer provocation (such as: being bumped from behind), problematic group entry situations (such as: not being allowed to sit with a group of kids at lunchtime). Attribution (hostile non-hostile) and responses to the perceived social cues. In the present study observed Cronbach's alphas were = .89 for with hostile attribution and = .84 for with response generation.

2.4 Statistical Analysis

Statistical analysis was carried out using SPSS, version 16.0 software. In particular, t-tests were computed to compare differences in SIP and type of aggression contrasting children with ADHD and typical others and also by gender.

3. Results

Table 1 presents the results from correlation analysis of the reactive and proactive aggression scale and SIP scale variables. Reactive aggression and attribution of intent were positively correlated as were proactive aggression and response generation.

Table 1. The correlations between the reactive and proactive aggression scale and SIP subscale

	Reactive Aggression	Proactive Aggression	Attribution of Intent	Response Generation
Reactive Aggression		-0.47**	0.33**	-0.21*
Proactive Aggression			-0.38**	0.78**
Attribution of Intent				-0.28**
Response Generation				

Note. N = 112. *p < .05. **p < .01.

Table 2 presents the findings from the analysis contrasting SIP and type of aggression by diagnosis. the findings show a statistically significant between group difference in SIP and type of aggression by diagnosis with children with ADHD showing significant SIP deficits and more aggressive compared to typically developing peers (p < 0 .005).

Table 2. Means and (standard deviations) with t-test results (N = 112)

		Whole Group			
Scales	ADHD (n = 51)	Normal (n = 61)	*T*	*df*	*p*
Reactive Aggression	25.16 (3.28)	21.41 (2.80)	2.30	110	0.03*
Proactive Aggression	27.34 (3.14)	22.47 (1.53)	3.93	110	0.01**
Attribution of Intent	7.06 (1.28)	6.20 (1.09)	3.74	110	0.01**
Response Generation	9.0 (6.47)	4.22 (3.45)	5.62	110	0.01**
Scales	Males (n = 63)	Females (n = 49)	*T*	*df*	*p*
Reactive Aggression	29.64 (2.27)	21.08 (3.02)	4.85	110	0.01**
Proactive Aggression	27.27 (2.86)	21.08 (1.29)	3.61	110	0.01**
Attribution of Intent	6.82 (1.27)	6.52 (1.26)	1.25	110	0.21
Response Generation	7.12 (2.84)	4.04 (3.48)	2.90	110	0.01**

**p < .01.

Table 3. Means, standard deviations, and t-test results for categorical with ADHD (N = 51)

Scales	Males (n = 29)	Females (n = 22)	*T*	*df*	*p*
Reactive Aggression	23.60 (2.87)	27.24 (3.03)	2.67	49	0.05*
Proactive Aggression	29.51 (2.27)	22.27(1.48)	4.91	49	0.01**
Attribution of Intent	4.31 (1.61)	6.20 (1.23)	4.31	49	0.01**
Response Generation	7.45 (1.63)	5.89(2.23)	3.75	49	0.01**

*p < .05. **p < .01.

Table 3 showed that there was statistically significant difference between group difference in SIP and type of aggression by ADHD with gender, showing significant males with ADHD to present with proactive aggression (and related response generation) whereas females with ADHD would be reactive aggression (and related attribution of intent) (*p < .05. **p < .01).

4. Discussion

This study examined the relationship between reactive and proactive types of aggression and SIP in children with ADHD. Additionally, the study examined the gender differences in reactive and proactive aggression as well as in SIP between children with ADHD and controls. Genders differenced were also examined.

Regarding the first question, findings suggest reactive aggression is more closely tied to attribution of intent whereas proactive aggression is more related to response evaluation (see also Bijttebier, Vasey, & Braet, 2003; Castro, Wille, Veerman, & Bosch, 2005; Hubbard et al., 2002; Salz, 2012). Other studies done on the SIP model that child with a high level of aggression are more associated with attributing hostile intentions to the behavior actions of their peers (Goraya & Sabah, 2013). Also, findings of this study showed that intent attribution was positively associated with reactive aggression. Meanwhile children with ADHD positive intention interact with peers jump into activities at unfortunate moments (Andrade, Brodeur, Waschbusch, Stewart, & McGee, 2009). Which makes peers that irritated, and manipulate (Hodgens, Cole, & Boldizar, 2000).

Consequently, the children with ADHD show responses reaction aggression as a result of not understanding the situation. This result is consistent with the view that children with ADHD have SIP gaps that translate into aggressive behavior. For instance, Hubbard et al. (2002) found that when children's reactive aggression were played a competitive board game "rigged", they showed extreme levels and increase in physiological reactivity and angry nonverbal behavior than children with proactive aggression do. Those with proactive aggression had predatory intentions to harm others (Crick & Dodges, 1988).

In sum up, many empirical studies have demonstrated the relationship at each SIP step with aggressive behaviors. At each step, For instance, several researchers have concluded that as compared with their nonaggressive peers, aggressive children encode fewer and less-benign social cues, Step one such as (Strassberg & Dodge, 1987); attribute more hostile intentions to others, Step two; such as (Dodge, 2006; Waschbusch, Korsch, & Beaumont, 2009); select goals that are more likely to damage relationships, Step three; generate fewer response options and develop responses that are less prosocial, Step four; such as (Waschbusch, 2002); and evaluate aggressive responses more favorably and expect more positive outcomes from aggressive behavior, Step five; such as (Waschbusch et al., 2009).

Regarding the second question we hypothesized that aggression may be uniquely related to ADHD more aggressively than normal children, this was confirmed by Barkley (1996) that children with ADHD are often more aggressive than their peers. First, inattention, impulsivity, and hyperactivity—parallel those demonstrated by many aggressive children. For example, impulsivity, which is a defining characteristic of ADHD (American Psychiatric Association, 2013) is also a defining characteristic of reactive aggression (Atkins, Osbome, Bennett, Hess, & Halperin, 2001; Waschbusch, 2002). Second, the symptoms of ADHD are likely to impair children's ability to accurately assess social situations, similarly, inattention, hyperactivity, and impulsivity may impair the generation, selection, and enactment of social responses (Andrade, Brodeur, Waschbusch, Stewart, & McGee, 2009). It was confirmed by Atkins and Stoff (1993) that children with ADHD, have higher levels of reactive or hostile types of aggression than those without ADHD. Also several leading researchers have concluded that many children with aggressive behavior also have ADHD, where studies have estimated that as many as 90% of conduct problem children have ADHD (Pliszka, Carlson, & Swanson, 1999). Based on these results, the aggressive child has a hostile attribution bias (Crick & Dodge, 1996), and be probably to generate aggressive

responses (Waschbusch et al., 2009). Conversely, typically developing peers encode fewer and less-benign social cues. And evaluate social cues more favorably, and expect more positive outcomes from aggressive behavior, Step five; such as (Waschbusch et al., 2009).

As for gender differences males and females differed in reactive and proactive aggression regardless of diagnosis. These results are consistent with the stated hypothesis and previous research (Archer, 2004; Mayberry & Espelage, 2007; Salaz, 2012). Findings are explained by the fact that Saudi males are socialized to be more aggressive than females. This can be interpreted by the nature of both genders. Males generally tend to be violent in their behaviors, whereas females tend to be submissive even though they face such an aggressive behavior from others. They try to be away from aggressive reaction. This might be due to the nature of education and socialization in most of Arab countries especially in Saudi Arabia where females are educated on obedience and making no problematic behaviors. The emphasis of many studies on the role of socialization as an important element that is difficult to ignore in generating differences in aggression between the two genders is a fact that assert such a finding.

Additionally, some people believe that parents consider exiting aggression as a kind of manhood. Parents unconsciously enhance such a kind of behavior. Tolerance is often with the boy's aggression, which sometimes encourages it among males. The findings of many studies indicate that less tolerant mothers with their daughters' aggression does not fit the feminine type of behavior in accordance to Saudi culture. This bias in socialization might reinforce in Arab culture in which females are educated on obedience more than are males (like Little et al., 2003; Mayberry & Espelage, 2007).

4.1 Limitations of the Study

This study demonstrated results of the social information processing qualities among children with reactive and proactive aggression among children with ADHD, However, the study has some limitations. Scales were applied in only one geographical area in Saudi Arabia. Thus, one cannot generalize the results of this study to all cities in Saudi Arabia. Other limitations in this study the aggression use in this group of children depends on many factors and may be influenced by Saudi culture and context and reinforcement contingencies. Further research is needed to investigate not only the types of aggression used by children with ADHD but also their reasons for using aggression in social situations and the influence of reinforcement in determining continued use of aggressive behavior. Furthermore, some ADHD children might not have comprehended some of the questions and others might have answered without awareness of what was meant by some question.

Despite these limitations, however, the present findings are among the first to show that a combined focus on Social Information Processing and Reactive and Proactive Aggression, can help clarify the unique nature of ADHD children.

5. Conclusion

There are no available studies to show knowledge of related between social information processing and aggression among children with ADHD in Saudi Arabia. Therefore, we conducted this study aiming to evaluate the knowledge of the social information processing qualities among children with reactive and proactive aggression among children with ADHD, Najran, in Saudi Arabia. The findings of the study indicated Saudi children with ADHD, have higher levels of reactive and proactive aggression compared to typically developing peers and from SIP deficits as previously observed with Western children. There is evidence that boys and girls differ in the SIP by the predominant type of aggression.

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References

Al-Hamed, J. H., Taha, A. Z., Sabra, A. A., & Bella, H. (2008). ADHD among Male Primary School Children in Dammam, KSA: Prevalence and Associated Factors. *Journal Egypt Public Health Assoc*, *83*(3-4), 165-182.

Al-Azzam, M. (2011). *Arab Immigrant Muslim Mothers' Perceptions of Children's Attention Defecit Hyperactivity Disorder (ADHD)* (Unpublished PhD Thesis). University of Iowa.

Al-Haidar, F. A. (2009). Co-morbidity and treatment of attention deficit hyperactivity disorder in Saudi Arabia. *East Mediterranean Health Journal*, *9*(5-6), 988-995.

Al-quraini, T. (2010). *Teachers' Perspectives of Inclusion of the Students with Severe Disabilities in Elementary Schools in Saudi Arabia* (Unpublished PhD Thesis). University of Ohio.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: American Psychiatric Association.

Andrade, B. (2006). *Finding the positive in a hostile world: Relationships between aspects of social information processing, prosocial behavior, and aggressive behavior, in children with ADHD and disruptive behavior* (Unpublished PhD Thesis). University of Dalhousie, Halifax, Nova Scotia.

Andrade, B. F., Brodeur, D. A., Waschbusch, D. A., Stewart, S. H., & McGee, R. (2009). Selective and sustained attention as predictors of social problems in children with typical and disordered attention abilities. *Journal of Attention Disorders*, *12*, 341-352. http://dx.doi.org/10.1177/1087054708320440

Archer, J. (2004). Sex differences in real-world settings: A meta-analytic review. *Review of General Psychology*, *8*, 291-332. http://dx.doi.org/10.1037/1089-2680.8.4.291

Atkins, M. S., Osbome, M. L., Bennett, D. S., Hess, L. E., & Halperin, J. M. (2001). Children's Competitive Peer Aggression during Reward and Punishment. *Aggressive Behavior*, *27*, 1-13. http://dx.doi.org/10.1002/1098-2337(20010101/31)27:1%3C1::AID-AB1%3E3.0.CO;2-J

Atkins, M. S., & Stoff, D. M. (1993). Instrumental and hostile aggression in childhood disruptive behavior disorders. *Journal of Abnormal Child Psychology*, *21*, 165-178. http://dx.doi.org/10.1007/BF00911314

Bener, A., Qahtani, R. A., & Abdelaal, I. (2006). The Prevalence of ADHD among Primary School Children in an Arabian Society. *Journal Atten Disord*, *10*(1), 77-82. http://dx.doi.org/10.1177/1087054705284500

Bijttebier, P., Vasey, M. W., & Braet, C. (2003). Special Sections: Information Processing Factors n Child and Adolescent Psychopathology. *Journal of Clinical Child and Adolescent Psychology*, *52*(1), 2-9. http://dx.doi.org/10.1207/S15374424JCCP3201_01

Castro, B., Wille, W., Veerman, J., & Bosch, J. (2005). Emotions in Social Information Processing and Their Relations With Reactive and Proactive Aggression in Referred Aggressive Boys. *Journal of Clinical Child and Adolescent Psychology*, *34*(1), 105-116. http://dx.doi.org/10.1207/s15374424jccp3401_10

Connor, D. F., Steeber, J., & McBurnett, K. (2010). A review of attention deficit/hyperactivity disorder complicated by symptoms of oppositional defiant disorder or conduct disorder. *Journal Developmental and Behavioral Pediatrics*, *31*, 427-440. http://dx.doi.org/10.1097/DBP.0b013e3181e121bd

Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin*, *115*, 74-101. http://dx.doi.org/10.1037/0033-2909.115.1.74

Crick, N. R., & Dodge, K. A. (1996). Social information-processing mechanisms in reactive and proactive aggression. *Child Development*, *67*, 993-1002. http://dx.doi.org/10.2307/1131875

Crick, N., & Dodge, K. A. (1988). *Social information processing mechanisms of reactive and proactive aggressive behavior in children* (Unpublished paper). Vanderbilt University, Nashville, TN.

Dodge, K. A. (1986). A social information-processing model of social competence in children. In M. Perlmutter (Ed.), *Minnesota symposium on child psychology* (Vol. 18, pp. 77-125). Hillsdale, NJ: Erlbaum.

Dodge, K. A., & Pettit, G. S. (2003). A bio psychosocial model of the development of chronic conduct problems in adolescence. *Developmental Psychology*, *39*(2), 349-371. http://dx.doi.org/10.1037/0012-1649.39.2.349

Dodge, K. A., Coie, J. D., & Lynam, D. (2006). Aggression and antisocial behavior in youth. In N. Eisenberg, D. William, & R. M. Lerner (Eds.), *Handbook of child psychology: Social, emotional, and personality development* (6th ed., Vol. 3, pp. 719-788). Hoboken, NJ: Wiley..

Dodge, K., & Coie, J. (1987). Social information processing factors in reactive and proactive aggression in children's peer groups. *Journal of Personality and Social Psychology*, *31*, 1146-1158. http://dx.doi.org/10.1037/0022-3514.53.6.1146

Eiraldi, R. B., Mazzuca, L. B., Clarke, A. T., & Power, T. J. (2006). Service utilization among ethnic minority children with ADHD: A model of help-seeking behavior. *Administration and Policy in Mental Health and Mental Health Services Research*, *33*(5), 607-622. http://dx.doi.org/10.1007/s10488-006-0063-1

Ercan, E., Ercan, S., Atilgan, H., Kabukçu, B., Uysal, T., Berrin, S., & Akyol, Ü. (2014). Predicting aggression in children with ADHD. *Child & Adolescent Psychiatry & Mental Health*, *8*(1), 1-17. http://dx.doi.org/10.1186/1753-2000-8-15

Farah, L., Fayyad, J., Fayyad, V., Fayyad, Y., Salamoun, M., Tabet, C., … Karam, E. (2008). ADHD in the Arab World A Review of Epidemiologic Studies. *Journal of Attention Disorder*, *13*(3), 211-222. http://dx.doi.org/10.1177/1087054708325976

Goraya, F., & Sabah, S. (2013). Parenting, Children's Behavioral Problems, and the Social Information Processing Among Children. Pakistan. *Journal of Psychological Research*, *28*(1), 107-124.

Hattar-Pollara, M., & Meleis, A. I. (1995). Parenting their adolescents: The experiences of Jordanian immigrant women in California. *Health Care for Women International*, *16*(3), 195-211. http://dx.doi.org/10.1080/07399339509516171

Hodgens, J. B., Cole, J., & Boldizar, J. (2000). Peer-based differences among boys with ADHD. *Journal of Clinical Child Psychology*, *29*, 443-452. http://dx.doi.org/10.1207/S15374424JCCP2903_15

Hubbard, J. A., Smithmyer, C. M., Ramsden, S. R., Parker, E. H., Flanagan, K. D., Dearing, K. F., … Simons, R. F. (2002). Observational, physiological, and self-report measures of children's anger: Relations to reactive versus proactive aggression. *Child Development*, *73*, 1101-1118. http://dx.doi.org/10.1111/1467-8624.00460

King, S., & Waschbusch, D. A. (2010). Aggression in children with attention-deficit/hyperactivity disorder. *Expert Rev Neurother*, *10*, 1581-1594. http://dx.doi.org/10.1586/ern.10.146

Little, D., Jones, M., Henrich, C., & Hawley, H. (2003). Disentangling the "whys" from the "whats" of aggressive behavioral. *International Journal Behavioral Development*, *27*, 122-133. http://dx.doi.org/10.1080/01650250244000128

Mamari, W., Emam, M., Al-Futaisi, A., & Kazem, A. (2015). Comorbidity of Learning Disorders and Attention Deficit Hyperactivity Disorder in a Sample of Omani Schoolchildren. *Sultan Qaboos University Med Journal*, *15*(4), 528-533. http://dx.doi.org/10.18295/squmj.2015.15.04.015

Mayberry, L., & Espelage, L. (2007). Associations among empathy, social competence, and reactive/proactive aggression subtypes. *Journal of Youth Adolescence*, *36*, 787-798. http://dx.doi.org/10.1007/s10964-006-9113-y

Oostermeijer, S., Nieuwenhuijzen, M., van de Ven, P. M., Popma, A., & Jansen, L. M. (2016). Ocial information processing problems related to reactive and proactive aggression of adolescents in residential treatment. *Personality and Individual Differences*, *90*, 54-60. http://dx.doi.org/10.1016/j.paid.2015.10.035

Orobio de Castro, B., Veerman, J. W., Koops, W., Bosch, J. D., & Monshouwer, H. J. (2002). Hostile attribution of intent and aggressive behavior: A meta-analysis. *Child Development*, *73*, 916-934. http://dx.doi.org/10.1111/1467-8624.00447

Parens, E., & Johnston, J. (2009). Facts, values, and attention-deficit hyperactivity disorder (ADHD): An update on the controversies. *Child and Adolescent Psychiatry and Mental Health*, *3*(1), 1. http://dx.doi.org/10.1186/1753-2000-3-1

Patai, R. (2002). *The Arab mind*. Long Island City: Hatherleigh Press.

Perry, D. G., Perry, L. C., & Rasmussen, P. (1986). Cognitive social learning mediators of aggression. *Child Development*, *57*, 700-711. http://dx.doi.org/10.2307/1130347

Pliszka, S. R., Carlson, C. L., & Swanson, J. M. (1999). *ADHD with co morbid disorders: Clinical assessment and Management*. New York: Guilford.

Pouw, L. B., Rieffe, C., Oosterveld, P., Huskens, B., & Stockmann, L. (2013). Reactive/proactive aggression and affective/cognitive empathy in children with ASD. *Research in Developmental Disabilities*, *34*, 1256-1266. http://dx.doi.org/10.1016/j.ridd.2012.12.022

Raine, A. et al. (2006). The Reactive-Proactive Aggression Questionnaire: Differential correlates of reactive and proactive aggression in adolescent boys. *Aggressive Behavior*, *32*, 159-171. http://dx.doi.org/10.1002/ab.20115

Salaz, J. (2012). *Adolescent Perceptions and Beliefs of proactive-reactive Aggression Explored Through The Social Information Processing Model of Aggression* (Unpublished PhD Thesis). University of New Mexico, Albuquerque, New Mexico.

Salmivalli, C., & Nieminen, E. (2002). Proactive and reactive aggression in bullies, victims, and bully-victims. *Aggressive Behavior*, *28*, 30-44. http://dx.doi.org/10.1002/ab.90004

Strassberg, Z., & Dodge, K. A. (1987). *Focus of social attention among children varying in peer status*. Paper presented at the Annual Meeting of the Association for the Advancement of Behavior Therapy, Boston, MA.

Waschbusch, P., Korsch, R. J., & Beaumont, C. (2009). Geodynamic modeling of aspects of the Bowen, Gunnedah, Surat and Eromanga Basins from the perspective of convergent margin processes. *Australian Journal of Earth Sciences*, *56*(3), 309-334. http://dx.doi.org/10.1080/08120090802698661

Waschbusch, D. A., & Willoughby, M. T. (2008). Attention-deficit/hyperactivity disorder and callous-unemotional traits as moderators of conduct problems when examining aggression and impairment in elementary school children. *Aggressive Behavior*, *34*, 139-153. http://dx.doi.org/10.1002/ab.20224

Waschbusch, D. A. (2002). A meta-analytic examination of comorbid hyperactive-impulsive-attention problems and conduct problems. *Psychology Bull*, *128*(1), 118-150. http://dx.doi.org/10.1037/0033-2909.128.1.118

Zaki, R. (2013). Enhancement the Awareness of Family Care givers Caring their Children With Attention Deficit Hyperactivity Disorder of the General Administration of Intellectual Education Centers in the city of Abha. *Journal of American Science*, *9*(8), 46-53.