

# The Social Media Disorder and Ostracism in Adolescents: (OSTRACA- SM Study)

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## ABSTRACT

**Objective:** Social media disorder (SMD) is defined as a behavioral addiction and has been associated with depression, loneliness, narcissism, low self-esteem, poor sleep quality, and low academic performance. Ostracism is a term defined as being ignored or excluded by others. The purpose of this study is to evaluate the predictors of ostracism in adolescents and test the effect of SMD on ostracism.

**Materials and Methods:** This study was performed as a survey study. Adolescents between 14 and 18 years of age were administered a structured questionnaire to assess socio demographic properties, SMD, and ostracism. The SMD Scale and Ostracism Experience Scale for Adolescents (OES-A) were used. Between January and June 2018, 864 university students  $\leq 18$  years of age were invited to the study and 684 (79.1%) of them participated.

**Results:** We found a positive correlation between OES-A and SMD scores ( $r=0.52$ ,  $p<0.001$ ). In the multivariate analysis, male gender, absence of a hobby, not being successful in the university, and high SMD scores were associated with high OES-A scores.

**Conclusion:** This is the first data obtained proving an association between SMD and ostracism. The impact of SMD and ostracism on psychosocial issues should be further evaluated.

**Keywords:** Adolescent, internet, ostracism, social media addiction, social media disorder.

## Introduction

With the increasing use of the internet, there is an increasing attempt to share and interact online. Social networking sites, popularly known as social media (SM), are online platforms where individuals can have public profiles, contact friends, and meet other people based on similar interests [1]. There is a progressively increasing demand for these sites, and this leads individuals to maintain their online social networks in a way that may lead to excessive SM usage [2]. According to recent data, there are 3.196 billion (42% of the world population) SM users worldwide [3]. In addition, the median time spent on SM is 6 hours.

Due to increasing exposure to SM, a term called social media disorder (SMD) or addiction (SMA) has been coined. SMD is not defined as a disorder in DSM-V. On the contrary, in literature, it is accepted as a behavioral addiction. It is postulated to cause symptoms similar to classical addictions. Thus, individuals with SMD can suffer from mood modification, salience, tolerance, withdrawal, and emotional symptoms [4]. In addition, it is claimed that those with SM addiction may have symptoms similar to those who are addicted to substances or have other behaviors [5]. Although SMD is a new field of research, there are numerous data about it. SMD has been associated with depression, anxiety, narcissistic behavioral changes, and loneliness [6-8]. Moreover, it negatively impacts self-esteem, sleep quality, and academic performance [9, 10]. Adolescence is a period during which an individual is open to learning and exploring and is, therefore, marked by rapid adoption of new technologies. Therefore, adolescents are exposed to possible negative influences of these new technologies [11]. SM is widely used by adolescents. They use SM more frequently to escape from authority and parental pressure [12]. SMD is an important problem in adolescents; however, the literature is limited on SMD in adolescents.

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Ostracism is a term defined as “being ignored or excluded by others”. It has an important impact on the sense of belonging, self-esteem, control, and meaningful existence [13]. In the longterm, ostracism can cause problems with a sense of belonging, self-esteem, control and meaningful existence. In addition, studies have shown that ostracism is associated with depression and physical health problems [14]. For optimum psychological development, it is important to develop healthy social interactions, understand social norms, and improve perspectives during adolescence. In addition, social exclusion or ostracization can cause psychological problems in socially sensitive adolescents [15, 16].

The purpose of this study is to define the risk factors of SMD and ostracism in adolescents and analyze the association between SMD and ostracism.

## Materials and Methods

The study was conducted as a survey. Institutional Ethics Committee approved the study protocol, and the study was as per the ethical standards laid down in the 1964 Declaration of Helsinki. All the participants involved provided informed consent. University students aged  $\leq 18$  were included. Participants with a history of neuropsychiatric illness that could cause difficulty in participating in the survey were excluded.

Adolescent participants were evaluated with structured questionnaires. The questionnaires were prepared using sociodemographic data, such as employment status, information about faculty, success in school, participation in social activities (theater and cinema, among others), the purpose of using the internet, if they have internet access at their home/dorm, and daily time spent on the internet. In addition, scales of OES-A and SMD were used. OES-A consisted of 11 items and was used to assess two ostracism subtypes: exclusion and ignorance. The sum of the 11 items resulted in a score ranging from 11 to 55. There is a positive correlation between the score and the ostracism experienced. Turkish validation of the scale was

performed by Akin et al. [17, 18] SMD contains nine questions, and the answers are structured with five-point Likert-type answers (1- never, 2- rarely, 3- sometimes, 4- usually, 5- always) [19, 20]. The individual questions can be evaluated separately or a total of scores can be used, ranging from 9-45.

Baseline characteristics of the participant group were described using frequencies and proportions for dichotomous and categorical variables. Univariate analysis of the predictors of OES-A and SMD scores was performed using Mann-Whitney U and Kruskal-Wallis tests. In addition, median scores were used for sorting OES-A and SMD scores into high and low. The median scores of 17.0 for OES-A and 19.5 for SMD were used. The analysis of factors associated with high OES-A and SMD scores were analyzed with chi-squared and Fisher's exact tests. The answers about parents' vital and marital statuses were categorized as “both alive” and other. Daily use of SM was grouped into “ $\leq 3$  hours”, “ $>3$  hours”, and non-users. The leisure interests of the participants were divided as “hobby present” or “absent”. The success parameter was grouped into “not successful” and “more.” A Pearson product-moment correlation coefficient was computed to assess the relationship between OES-A and SMD scores. The parameters with a  $p < 0.20$  were further analyzed in multivariate analysis. For high SMD scores, gender, whether living in town/village, mother's educational status, family structure, employment status, economic status, the absence of a hobby, success in school, and high OES-A scores were further tested in the multivariate analysis using a logistic regression model. Furthermore, for deriving high OES-A scores, male gender, living in town/village, studying theology, having an extended family, working, the absence of a hobby, low success in school, time spent on social media, and high SMD scores were used. All analyses were performed by Statistical Package for the Social Sciences 17.0 for Windows (SPSS Inc.; Chicago IL, USA). Values of  $p < 0.05$  were considered statistically significant.

## Results

Between January and June 2018, 864 university students below 18 years of age were invited to participate in the study, of which 684 (79.1%) participated and were evaluated. Of the participants, most were female (492, 71.9%), 525 (76.8%) were 18, and 159 (23.2%) were 17 years old (mean 17.7,  $SD = 0.42$ ) (Table 1). Most of the adolescents were students of Education faculty (235, 34.4%) and

**Table 1. Characteristics of participants**

Characteristics	n (%)
Age	
17	159 (23.2)
18	525 (76.8)
Gender	
Female	492 (71.9)
Male	192 (28.1)
Live in	
City center	351 (51.3)
Other (town, village)	333 (48.7)
Faculty	
Education	235 (34.4)
Economics and Administrative sciences	100 (14.6)
Veterinary	86 (12.6)
Health Sciences	80 (11.7)
Engineering	84 (12.3)
Science and Literature	63 (9.2)
Theology	36 (5.3)
Parents	
Both alive	648 (94.7)
Divorced	26 (3.8)
Father died	10 (1.5)
Educational status- father	
Illiterate	0 (0)
Primary school	387 (56.6)
Middle school	20 (2.9)
High school	155 (22.7)
University	122 (17.8)
Educational status- mother	
Illiterate	25 (3.7)
Primary school	457 (66.8)
Middle school	35 (5.1)
High school	120 (17.5)
University	47 (6.9)
Family structure	
Nuclear family	583 (85.2)
Extended family	10 (1.48)
Working part-time	78 (11.4)
Less than 1 year	34 (43.6)
More than 1 year	44 (56.4)
Economical status	
Average	576 (84.2)
Good	108 (15.8)
Hobby	
Present	317 (46.3)
Absent	367 (53.7)
Success in school	
Excellent	2 (0.3)
Good	270 (39.5)
Moderate	326 (47.7)
Bad	86 (12.6)
Theater or cinema	
$\geq$ Once monthly	423 (61.8)
$<$ Once monthly	261 (38.2)
Purpose of using internet	
Fun	585 (85.5)
Educational activities	54 (7.9)
Both	45 (6.6)
Time spent in social media	
None	21 (3.1)
Less than 3 hours	289 (42.3)
More than 3 hours	371 (54.7)

### Main Points

- There is a positive correlation between OES-A and SMD scores.
- The male gender, absence of a hobby, not being successful in the university, and high SMD scores were associated with high OES-A scores.
- The impact of SMD and ostracism on psychosocial issues should be further evaluated.

Economics and Administrative Sciences (100, 14.6%); 51.3% of the participants lived in the city center. Both parents of 94% of the research participants were alive and living together and 81.4% of them had a nuclear family; 78 (11.4%) participants had a part-time job, and 56.4% of them had a work experience of more than one year. Most of the study population (367, 53.7%) had a hobby, either sports or art. In addition, 61.8% of the adolescents went to theater/cinema more than once in a month. All of them had internet access at their homes/ dormitories. Most of the adolescents used the internet only for fun (585, 85.5%), and 54.7% (374) of them spent more than 3 hours on SM. Only 3.1% of the participants did not use SM.

The median SMD score was 19.5 (9-41). In the univariate analysis, male participants, having an extended family, positive employment status, average economic status, the absence of a hobby, being unsuccessful in school, and high OES-A scores were associated with high SMD scores. The participants whose mothers were university graduates had lower SMD scores (Table 2). In addition, adolescents who spent more than 3 hours on social media had higher SMD scores (24.0 vs 18.0,  $p < 0.001$ ). In the multivariate analysis, male gender (OR=1.7, CI 95% (1.1-2.7),  $p=0.008$ ), absence of a hobby (OR=1.7, CI 95% (1.2-2.5),  $p=0.002$ ), living in an extended family (OR=2.2, CI 95% (1.3-3.7),  $p=0.002$ ), and high OES-A scores (OR=2.3, CI 95% (1.6-3.4),  $p < 0.001$ ) were associated with high SMD scores (Table 3). In addition, mother's educational status (university graduate) was found to be protective against high SMD scores (OR=0.1, CI 95% (0.03-0.3),  $p < 0.001$ ).

The median score of OES-A was 17.0 (11-48). There was a positive correlation between OES-A and SMD scores ( $r=0.52$ ,  $p < 0.001$ ). In the univariate analysis, male gender, positive employment status, absence of a hobby, being unsuccessful in university, time spent on social media, and high SMD scores were found to be associated with high OES-A scores (Table 4). In the multivariate analysis, male gender (OR=14.1, CI 95% (8.3-23.7),  $p < 0.001$ ), absence of a hobby (OR=1.5, CI 95% (1.07-2.3),  $p=0.02$ ), not being successful in university (OR=2.1, CI 95% (1.1-3.8,  $p=0.01$ ) and high SMD scores (PR=2.3, CI 95% (1.6-3.4),  $p < 0.001$ ) were associated with high OES-A scores (Table 3).

## Discussion

In the present study, we attempted to define the risk factors of SMD and ostracism in ado-

**Table 2.** The factors associated with SMD scores

Characteristics	SMD scores (median, range)	p	High SMD scores (n, %)	p
Age				
17	21.0 (12-38)	0.055	89 (56.0)	0.22
18	19.0 (9-41)		253 (48.2)	
Gender				
Female	19.0 (9-41)	<0.001	207 (42.1)	<0.001
Male	25.0 (10-41)		135 (70.3)	
Live in				
City center	19.0 (9-41)	0.80	168 (47.9)	0.14
Other (town, village)	20.0 (9-41)		174 (52.3)	
Faculty				
Education	20.0 (9-41)	0.73	118 (50.2)	0.29
Economics and Administrative sciences	21.0 (9-41)		55 (55.0)	
Veterinary	20.0 (10-35)		46 (53.5)	
Health Sciences	19.5 (9-41)		40 (50.0)	
Engineering	19.0 (9-35)		37 (44.0)	
Science and Literature	20.0 (9-37)		32 (50.8)	
Theology	18.5 (9-35)		37 (44.0)	
Theology	18.5 (9-35)	0.30	14 (38.9)	0.21
Other	20.0 (9-41)		328 (50.6)	
Parents				
Both alive	20.0 (9-41)	0.36	325 (50.2)	0.43
other	18.0 (12-38)		17 (47.2)	
Educational status- father				
Illiterate				
Primary school	19.0 (9-41)	0.40	188 (48.6)	0.32
Middle school	21.0 (8-37)		20 (100.0)	
High school	20.0 (10-39)		78 (50.3)	
University	19.0 (9-41)		56 (45.9)	
Educational status- mother				
Illiterate	18.0 (9-41)	<0.001	1 (4.0)	<0.001
Primary school	20.0 (9-41)		247 (54.0)	
Middle school	20.0 (18-39)		21 (60.0)	
High school	24.0 (10-41)		69 (57.5)	
University	14.0 (13-38)		4 (8.5)	
University	14.0 (13-38)		4 (8.5)	
Other	20.0 (9-41)	<0.001	338 (53.1)	<0.001
Family structure				
Nuclear family	19.0 (9-41)	<0.001	273 (46.8)	<0.001
Extended family	27.0 (10-41)		69 (68.3)	
Working part-time				
Yes	20.0 (10-41)	0.011	50 (64.1)	0.006
No	19.0 (9-41)		292 (48.2)	
Economical status				
Average	20.0 (9-41)	<0.001	301 (52.3)	0.004
Good	17.0 (9-41)		41 (38.0)	
Hobby				
Present	19.0 (9-41)	0.001	124 (39.1)	<0.001
Absent	21.0 (9-41)		218 (59.4)	
Success in school				
Not successful	24.0 (10-39)	0.051	52 (60.5)	0.025
More	19.0 (9-41)		290 (48.5)	
OES-A Scores				
High	23.0 (10-41)	<0.001	222 (64.7)	<0.001
Low	18.0 (9-35)		120 (35.2)	

SMD: Social media disorder; OES-A: Ostracism experience Scale for Adolescents; \*Mann Whitney U/ Kruskal-Wallis tests to compare SMD scores and chi-square/ Fisher exact tests to test high SMD scores.

**Table 3.** Multivariate analysis of factors associated with high OES-A and SMD scores

	High OES-A score			High SMD score		
	OR	CI (95%)	p	OR	CI (95%)	p
Male gender	14.1	8.3-23.7	<0.001	1.7	1.1-2.7	0.008
Absence of a hobby	1.5	1.07-2.3	0.02	1.7	1.2-2.5	0.002
Not being successful in university	2.1	1.1-3.8	0.01	1.4	0.8-2.4	0.18
High SMD scores	2.3	1.6-3.4	<0.001			
Living in village/town	1.02	0.6-1.5	0.91	0.7	0.5-1.08	0.13
Living in a extended family	1.0	0.5-1.7	0.92	2.2	1.3-3.7	0.002
Working	1.2	0.6-2.3	0.46	1.4	0.8-2.5	0.20
Time spent in social media						
<3 hours*	0.6	0.3-1.3	0.26			
>3 hours*	1.2	0.6-2.5	0.53			
Studying Theology	0.47	0.2-1.1	0.08			
Economical status-average				0.8	0.5-1.4	0.66
Mother's educational status- University				0.1	0.03-0.3	<0.001
High OES-A score				2.3	1.6-3.4	<0.001

SMD: Social media disorder; OES-A: Ostracism experience Scale for Adolescents; \*Logistic regression; \*When compared with Nonusers. Model was used for multivariate analysis

lescents and analyze the association between the two. Male gender, absence of a hobby, living in an extended family, and high OES-A were defined as risk factors for SMD. However, having a mother who graduated from university was found to be protective against SMD. Male gender, absence of a hobby, being unsuccessful in school, and high SMD were defined as risk factors of ostracism. We, therefore, documented an important association between SMD and ostracism.

SM addiction has gained interest in the last 10 years. A lot of studies have tried to analyze the causes and impacts of SM addiction on adolescents. SMD is a wider term used to define SMA and internet gaming disorder [19]. The prevalence of SMA has been reported to be 2.8%-41% in adolescents [8, 21]. There is limited data about the risk factors of SMD. While in some literature, the female gender [22-24] has been associated with SMD, in some others, the male gender was found to be a risk factor [25]. However, data showing no relationship between gender and addiction is also present [26, 27]. In our study, we demonstrated that males were more prone to SMD. Young individuals and adolescents with anxiety and depression are at risk for SMD [28, 29]. The analysis by Sasmaz et al. [30] found that having a hobby decreased the risk of internet addiction. The importance of mother's educational status was also found to have an important effect on adolescents' internet addiction. In accordance with the data,

our analysis showed that having a hobby and a mother who is a university graduate were protective against SMD. The mother has an important role in psychosocial development of a child. Their role on SMD has been analyzed in some of the literature. Gezgin et al. [31] showed that the internet addiction increases based on the mother's level of education. Wu et al. [32] concluded that divorced families, low-income families, families in which family conflict exists, and severely dysfunctional families are risk factors for SMD. Therefore, our data confirmed the protective role of mothers who have an academic degree.

There is a lot of negative impact of SMD. It has been associated with loneliness. However, it is difficult to conclude what came first, the chicken or the egg. Savci et al. [33] studied the association between social media usage and loneliness and concluded that SM usage is predicted directly by impulsivity. In addition, SM predicts loneliness. On the other hand, Bonetti et al. [34] showed that adolescents who self-reported being lonely communicated online more frequently about personal and intimate topics than did those who did not self-report being lonely. Lonely adolescents were motivated to use online communication significantly more frequently than others to compensate for their weaker social skills to meet new people. Sharabi et al. [35] also documented that the use of the internet to support interpersonal communication with friends resulted in less intense

loneliness. In our study, we demonstrated a positive correlation between SMD and ostracism. However, it is difficult to conclude which one is the cause.

The term "ostracism" originated the word "ostraca" (shards of clay). In 500 B.C., the Athenians were voting by writing the names of a member of the community onto ostraca where they were deciding to banish the member or not. Thus, ostracism became a term defining social exclusion. In the study by Gurler et al. [36], they found ostracization more prevalent in adolescents. Although the study conducted by Ogurlu et al. [37] has not found an association between gender and ostracism, we concluded that the male gender increases the risk of ostracism by 14.1 fold. However, to compare our results with this study is very difficult because it was conducted in middle-school-aged and gifted adolescents. The absence of a hobby and low success in school have also been associated with more ostracization.

There are some limitations to this study. First, due to its being a survey study, the subjectivity of the evaluation process was inevitable. In addition, the documentation of "success in school" and "economic status" were declared by the participants. This could be analyzed more objectively. Both the validated SMD and OES-A scales did not have cut-off values for grouping participants; therefore, the analysis was done by using median values. The analysis of accessing SM either by cellular phone or internet could also have provided important data.

In conclusion, while male gender, the absence of a hobby, living in an extended family, and ostracism were defined as risk factors for SMD; graduate mothers were protective against SMD. In addition, the male gender, the absence of a hobby, being unsuccessful in school, and high SMD were defined as risk factors of ostracism. We documented an important association between SMD and ostracism; however, this association and others should be further studied along with psychosocial factors that can affect ostracism. The parameters discussed in the limitations section could provide us important data. In addition, behaviors that decrease SMD in adolescents should be encouraged.

**Ethics Committee Approval:** Ethics committee approval was received for this study from the ethics committee of Burdur Mehmet Akif Ersoy University Non-Interventional Ethical Committee.

**Table 4.** Factors associated with OES-A scores

Characteristics	OES-A scores (median, range)	p	High OES-A scores (N, %)	p
Age				
17	17.0 (11-21)	0.82	81 (50.9)	0.44
18	19.0 (12-48)		262 (49.9)	
Gender				
Female	16.0 (11-33)	<0.001	170 (34.6)	<0.001
Male	27.5 (14-48)		173 (90.1)	
Live in				
City center	16.0 (11-46)	0.074	165 (47.0)	0.054
Other (town, village)	17.0 (11-48)		178 (53.5)	
Faculty				
Education	17.5 (13-48)	<0.001	105 (44.7)	<0.001
Economics and Administrative sciences	21.0 (14-36)		66 (66.0)	
Veterinary	23.5 (14-34)		62 (72.1)	
Health Sciences	15.5 (11-40)		31 (38.8)	
Engineering	17.5 (14-25)		41 (48.8)	
Science and Literature	17.0 (13-40)		26 (41.3)	
Theology	15.5 (12-27)		12 (33.0)	
Theology	15.5 (11-37)		12 (33.3)	
Other	17.0 (11-48)	0.07	331 (50.1)	0.02
Parents				
Both alive	18.0 (11-48)	0.33	323 (49.8)	0.31
other	17.0 (11-41)		20 (44.6)	
Educational status- father				
Illiterate				
Primary school	16.0 (11-48)	0.44	192 (49.6)	0.93
Middle school	17.5 (12-40)		11 (55.0)	
High school	17.0 (11-41)		80 (51.6)	
University	16.0 (11-48)		60 (49.2)	
Educational status- mother				
Illiterate	15.0 (11-35)	0.19	10 (40.0)	0.62
Primary school	16.0 (11-48)		222 (48.6)	
Middle school	16.0 (12-40)		17 (48.6)	
High school	18.0 (11-48)		74 (61.7)	
University	16.0 (13-46)		20 (42.6)	
Family structure				
Nuclear family	16.0 (11-48)	0.065	286 (49.1)	0.10
Extended family	18.0 (11-45)		57 (56.4)	
Working part-time				
Yes	18.0 (11-48)	0.004	48 (61.5)	0.02
No	16.0 (11-48)		295 (48.7)	
Economical status				
Average	17.0 (11-48)	0.004	302 (52.4)	0.004
Good	15.0 (11-41)		41 (38.0)	
Hobby				
Present	15.0 (11-48)	<0.001	129 (40.7)	<0.001
Absent	18.0 (11-48)		214 (58.3)	
Success in school				
Not successful	21.0 (11-48)	<0.001	59 (68.6)	<0.001
More	16.0 (11-48)		284 (47.5)	
Theater or cinema				
≥Once monthly	16.0 (11-48)	0.55	210 (49.6)	0.39
<Once monthly	17.0 (11-48)		133 (51.0)	
Purpose of using internet				
Fun	16.0 (11-48)	0.21	288 (49.2)	0.48
Educational activities	18.5 (11-37)		31 (57.4)	
Both	17.0 (11-36)		24 (53.3)	
Time spent on social media				
None	28.0 (13-48)	<0.001	18 (85.7)	<0.001
Less than 3 hours	15.0 (11-46)		102 (35.3)	
More than 3 hours	18.0 (11-48)		223 (59.6)	
SMD Scores				
High	19.0 (11-48)	<0.001	222 (50.1)	<0.001
Low	15.0 (11-34)		121 (35.4)	

SMD: Social media disorder; OES-A: Ostracism experience Scale for Adolescents; \*Mann Whitney U/ Kruskal-Wallis tests to compare OES-A scores and chi-square/ Fisher exact tests to test high OES-A scores

**Informed Consent:** Written informed consent was obtained from patients who participated in this study.

**Peer-review:** Externally peer-reviewed.

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