



Original Article

Media, Technology Use, and Attitudes: Associations With Physical and Mental Well-Being in Youth With Implications for Evidence-Based Practice

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Keywords

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ABSTRACT

Background: Previous research has shown that the use of technology and media, in their different available forms, may have detrimental effects on the physical and mental well-being of adolescents and young adults.

Aims: The present study aimed to investigate the use of different types of technology and media, attitudes toward them, and how they relate to physical and mental well-being in Lebanese university students.

Methods: A descriptive, correlational, cross-sectional design was used. A sample of 244 undergraduates completed a self-report measuring media and technology use and attitudes, eating-related variables (e.g., healthy eating, body image dissatisfaction [BID], and eating disorders [EDs] risk), trait emotional intelligence (TEI), and psychopathology indicators (stress, anxiety, and depression).

Results: The use of mobile phone multimedia (music, pictures, and videos) correlated with unhealthy eating and stress. Social media use was associated with BID, EDs risk, and the self-control construct of TEI. Anxiety of separation from technological devices and dependence on them was associated with increased BID, EDs risk, depression, and anxiety.

Linking Evidence to Action: Practical implications are discussed in terms of setting limits and boundaries on technology use during childhood and adolescence, and encouraging healthy eating and physical activity at home and on college campuses. Moreover, social media could be used as a platform for intervention and prevention programs to decrease BID, EDs, depression, and anxiety.

BACKGROUND

Information and communication technology has greatly improved the living standards of people around the world. However, the time people spend on their smartphones, on social networking sites (SNSs), behind their computer screens, playing video games, or simply watching TV may have significant effects on their physical and mental health (Dalky, Al Momani, Al-Drabaah, & Jarrah, 2017).

Many systematic reviews have been conducted to synthesize current empirical research on the effects of media and technology among young people, revealing evidence of both beneficial and harmful effects. In one review, the benefits of using online technologies were reported as increased self-esteem, perceived social support, increased social capital, safe identity experimentation, and increased opportunity for self-disclosure. The harmful effects were reported as increased exposure to harm, social isolation, depression, and cyber-bullying (Best, Manktelow, &

Taylor, 2014). Another review highlighted the potential for addiction and the detrimental effects of excessive use on health, such as quality of sleep, body composition, mental well-being, and engaging in risky sexual behaviors, while also reporting the tremendous potential for technology use to promote adolescent health (Bilgrami, McLaughlin, Milanaik, & Adesman, 2017). Likewise, a recent review by Marchant et al. (2017) showed that self-harm or suicidal behavior was particularly associated with Internet addiction, high levels of Internet use, and Web sites with self-harm or suicide content. Conversely, it was discussed that Internet use has the potential for isolation reduction and outreach, and may be a source of help and therapy.

Weight-Related Correlates of Technology Use and Attitudes

Increased technology use may lead to unhealthy eating habits. In a recent study conducted in Jordan, a higher intake of

calorie-dense beverages was reported in adolescents who watched TV for several hours per day, compared to adolescents who did not use technologies while eating (Dalky et al., 2017). It was suggested that the use of technology increases the risks of being obese, not only because of the associated intake of poor quality food, but also because technology use limits physical movement compared to other daily activities (Dalky et al., 2017).

Technology use was also shown to have detrimental effects on body image. Body image dissatisfaction (BID) occurs when there are negative thoughts about one's self-image and perceived discrepancies between one's real and ideal body (Tiggemann & Pickering, 1996). There is a growing body of literature that shows that mass media has a strong influence on adolescents' self-image (Legenbauer, Rühl, & Vocks, 2008). Media content often portrays an ideal body as being thin and associates being overweight with negative connotations (Lawrie, Sullivan, Davies, & Hill, 2006).

Recently, research has been carried out to study specifically the influence of SNSs on BID in adolescents. Recent work by Holland and Tiggemann (2016) concluded that there is a positive relationship between general SNS use and BID. Similarly, it was shown that the use of Facebook was associated with increased body image concerns in adolescents (Fardouly & Vartanian, 2015; Tiggemann & Slater, 2013). This may be because adolescents who spend a lot of time on Facebook tend to compare their appearance more to celebrities and peers, compared to those who spend less time on Facebook and other social media platforms (Vartanian & Dey, 2013). Another recent study also concluded that images of celebrities and peers via Instagram can be detrimental to women's body image (Brown & Tiggemann, 2016). Specific SNS activities, such as viewing and uploading photos and seeking negative feedback via status updates, were identified as particularly problematic, as they are associated with increased BID and disordered eating (Holland & Tiggemann, 2016).

The role of media in its various forms (TV, magazines, and Internet) has also been pivotal in predisposing individuals toward adopting disordered eating attitudes and behaviors (Holland & Tiggemann, 2016). It was shown that TV exposure and engagement in different SNSs increase the risk of developing eating disorders (EDs) in adolescents (Becker et al., 2011; Martínez-Gómez et al., 2015). Therefore, previous findings have revealed that media has a negative impact on BID and disordered eating, and can potentially contribute to EDs.

Psychological Correlates of Technology Use and Attitudes

There is a growing body of evidence showing that individual media use patterns are influenced by personality and emotion-related variables. In turn, media exposure can affect individuals' emotional functioning and mental health. As a matter of fact, there is a growing body of research studying the psychological profile of Internet and phone overusers and the im-

pact of Web and phone usage on well-being (Beranuy, Oberst, Carbonell, & Chamarro, 2009).

Trait emotional intelligence (TEI) is conceptualized as a constellation of emotion-related self-perceptions located at the lower levels of hierarchical personality structures (Petrides, Sanchez-Ruiz, Siegling, Saklofske, & Mavroveli, *in press*). An ever-increasing body of research has linked TEI with a myriad of factors relating to individuals' psychosocial (Di Fabio & Saklofske, 2014), emotional (Malouff, Schutte, & Thorsteinsson, 2014), and behavioral well-being (Athota & O'Connor, 2014). Research shows that TEI moderates the impact of unhealthy habits on overall health. In particular, TEI has been associated positively with physical activity and healthy diet (Saklofske, Austin, Rohr, & Andrews, 2007), and negatively with unhealthy habits such as drug use, smoking, and self-harming behaviors (Schutte, Malouff, & Hine, 2011). Despite the long recognized psychological vulnerability of college students to the use of technology, especially the Internet (Kandell, 1998), and the importance of emotion regulation in this context (Takao, Takahashi, & Kitamura, 2009), potential protective factors such as TEI have been relatively overlooked. Investigating systematically the construct of TEI, which offers ample coverage of emotional dispositions related to sociability, emotionality, well-being, and self-control (Petrides, 2010), could shed light on the complex links between emotional functioning and technology use and attitudes.

Among the emotion-related variables, this study explored anxiety, depression, and stress as psychopathology indicators and potential correlates of technology use and attitudes. In fact, there is increasing interest in examining the impact of technology use on psychological health. Previous research studies have reported a link among Internet use, depression, and anxiety (Selfhout, Branje, Delsing, Ter Bogt, & Meeus, 2009). In particular, Internet users who spend more than 2 hr online were more likely to be depressed than their counterparts who spend an average of 2 hr (Morrison & Gore, 2010). In addition to the time spent on social media, Blease (2015) argues that the frequency of use, number of virtual friends, and bragging content of the posts read could explain the negative relationship between Internet use and depression. Mobile phone use has also been shown to be a risk factor of mental health outcomes—in particular, stress, anxiety, sleep disturbances, and depressive symptoms (Thomée, Härenstam, & Hagberg, 2011).

Taken together, results from the literature suggest that pathological attitudes toward technology, as well as technology use, could be contributing differentially to decreased physical and mental well-being. The main purpose of the present study was, therefore, to investigate the relationship between the use of different types of technology and media and BID, EDs risk, and healthy eating. Another aim was to investigate the relationship between media and technology usage and attitudes and TEI as personality variables, as well as stress, anxiety, and depression as psychopathology indicators. This paper is a valuable contribution to the existing body of knowledge because (a) it examines a wide variety of weight-related and personality

and mental health variables in relation to both media and technology use and attitudes toward them; (b) it discriminates among different types of technology, rather than focusing on one in particular, as in the case of previous research (e.g., Facebook; Blease, 2015); and (c) it presents an adaptation of the Media and Technology Usage and Attitudes Scale (MTUAS; Rosen, Whaling, Rab, Carrier, & Cheever, 2013) to the Lebanese population.

METHODS

Participants

Participants were recruited from a Lebanese university with campuses in different areas in the region. The sample consisted of 244 undergraduates (156 females) aged 16–21 ($M = 18.10$; $SD = 0.64$), with the majority being 17-year (9.4%), 18-year (73.8%), and 19-year olds (12.7%).

Procedure

After obtaining the ethical approval of the university IRB, which is constituted in accordance with the U.S. Code of Federal Regulation (45CFR 46.107, 21CFR 56.107) and Good Clinical Practice ICH (Section 3), a convenient sample of undergraduates was asked to voluntarily participate in the study. Data were collected during class time, and testing sessions lasted around 20 min. Students were recruited from introductory English classes, as these classes include a variety of freshmen and sophomores who are enrolled in all the different majors offered at the university.

Measures

Media and technology usage was measured through the MTUAS (Rosen et al., 2013). The scale originally consisted of 11 usage subscales and four attitude subscales that were rated on a 10-point Likert scale ranging from 1 = *never* to 10 = *all the time*. This scale was not validated in Lebanon or the region; therefore, one of the aims of the present study was to adapt and validate it.

Dietary behavior was measured through an adapted version of the Arab Teens Lifestyle (ATLS) Questionnaire, developed in Saudi Arabia (Al-Hazzaa, Musaiger, & ATLS Research Group, 2011), of which 10 items assessed healthy or unhealthy eating, rated on an 8-point scale ranging from 1 = *none* to $\geq 7 = 7$ times or more. This scale was previously validated in Bahrain with a reliability of 0.82 (Musaiger, Bader, Al-Roomi, & D'Souza, 2011). The internal consistency of this scale in our sample was 0.72.

ED risk was measured with the SCOFF screening (Morgan, Reid, & Lacey, 1999). It consists of five yes or no items. The SCOFF was previously validated in Lebanon, with the best diagnostic threshold being at two positive answers with a sensitivity of 80.0%, a specificity of 72.7%, and an area under the curve of 80.0% (Aoun et al., 2015).

BID was measured through the Body Shape Questionnaire (BSQ-8c) shortened form (Evans & Dolan, 1993). Each item is

scored from 1 = *never* to 6 = *always*. A score below 19 indicates no concern with shape, 19–25 a mild concern, 26–33 a moderate concern, and > 33 a marked concern with shape. The internal consistency of this scale in our sample was 0.90.

TEI was measured through the Trait Emotional Intelligence Questionnaire (TEIQue; Petrides, 2009). The TEIQue consists of 30 items rated on a 7-point Likert scale ranging from 1 = *completely disagree* to 7 = *completely agree*. The TEIQue also provides scores on four broad factors (well-being, emotionality, sociability, and self-control) and 15 facets. The TEIQue has shown excellent psychometric properties in a variety of youth samples internationally (Sanchez-Ruiz, Mavroveli, & Poullis, 2013) and is in the process of being validated in Lebanon (Sanchez-Ruiz, Abi Habib, & Tohme, 2018). In our sample, the internal consistency was 0.82 for global TEI.

Depression, anxiety, and stress were measured through the Depression Anxiety Stress Scale (DASS-21; Henry & Crawford, 2005). It consists of a 21-item self-report questionnaire designed to measure the severity of a range of symptoms common to both depression and anxiety, with scores that range from 0 = *did not apply to me* to 3 = *applied to me most of the time*. In our sample, the internal consistencies of the DASS were as follows: 0.87 for depression, 0.83 for stress, and 0.82 for anxiety.

Statistical Analysis

Analysis was performed using SPSS 21 (IBM Corp., Armonk, NY, USA) and STATA 13 (StataCorp., College Station, TX, USA). Data reduction techniques were employed to explore the technology usage and attitude scale. Exploratory factor analysis, using principal component analysis with varimax rotation, was used to derive the set of factors and to maximize the variance of the factor loading. The Kaiser–Guttman criterion (eigenvalues ≥ 1.0) was used to decide on the number of factors that would be retained. A factor loading of at least 0.55 was used to decide on factors' associated items. Pearson's correlations were used to examine the relationship among demographic characteristics, the main study variables, global TEI and its subscales, DASS subscales, BID scores, SCOFF, total conscientiousness, and technology usage and attitude subscales.

RESULTS

Exploratory Factor Analysis

The principal component analysis of the 31 media usage items yielded eight factors, which accounted for 66.745% of the variance (Table S1). Ten items failed to meet the 0.55 threshold criterion and were not included in any factor. The eight daily media uses included email (three items; 7.376%), text and WhatsApp messaging (two items; 5.121%), mobile phone multimedia—music, pictures, and video (three items; 6.508%), technology use during work or school (two items; 3.540%), Internet searching (three items; 9.406%), social media use (four items; 25.704%), social media posting (two items; 5.277%), and friends and followers (two items; 3.814%).

The principal component analysis of the 12 attitudinal items resulted in three factors accounting for 57.43% of the variance (Table S2). The first factor included six items related to positive attitudes toward technology (32.15%). The second factor included three items reflecting anxiety attitudes toward technology (13.99%). The third factor included three items related to negative attitudes toward technology (11.29%).

Table S3 displays the means, standard deviations, skewness, and Cronbach's alpha coefficients of all 11 subscales. All media subscales had acceptable to excellent reliabilities.

Gender Differences

To test for gender differences, independent sample *t*-tests were carried out to compare the mean scores on the technology usage and attitude scale. Results were not significant; thus, the sample was not split by gender.

Body Image Dissatisfaction

Table S4 displays the correlations between BID score and social media subscales. Higher BID scores were positively correlated with use of text and WhatsApp messaging ($r = .19, p < .01$), Internet search ($r = .13, p < .05$), social media use ($r = .18, p < .01$), and anxiety attitude ($r = .14, p < .05$) toward technology.

ED (SCOFF) Score

Table S5 displays the correlations between SCOFF score and social media subscales. Higher SCOFF scores were positively correlated with use of text and WhatsApp messaging ($r = .14, p < .05$), technology use ($r = .15, p < .05$), social media use ($r = .16, p < .05$), and anxiety attitude ($r = .14, p < .05$) toward technology.

Unhealthy Eating

Table S6 displays the correlations between total unhealthy score and social media subscales. Higher scores were positively correlated with mobile phone multimedia ($r = .21, p < .01$) and technology use ($r = .16, p < .05$). Unhealthy eating score was not correlated with technology attitudes.

Trait Emotional Intelligence

Table S7 displays the correlations between global TEI, its subscales, and social media subscales. Global TEI and its subscales emotionality and sociability were positively correlated with the friends and followers' subscale ($r = .15, p < .05$; $r = .19, p < .01$; and $r = .17, p < .05$). Well-being and sociability subscales were both positively correlated with text and WhatsApp subscales ($r = .19, p < .05$ and $r = .15, p < .05$, respectively). The self-control factor was negatively correlated with technology use ($r = .17, p < .05$) and social media use ($r = -.16, p < .05$). The emotionality factor was negatively correlated with Internet search ($r = -.15, p < .05$). Neither global TEI nor its factors were significantly correlated with technology attitudes.

Stress, Anxiety, and Depression

Table S8 displays the correlations between DASS subscales and social media subscales. Stress was positively correlated with several subscales, including mobile phone multimedia ($r = .14, p < .05$) and Internet search ($r = .17, p < .01$). Stress was also associated with positive ($r = .22, p < .001$), negative ($r = .26, p < .001$), and anxiety ($r = .30, p < .001$) attitudes toward technology. Anxiety and depression were both positively correlated with negative ($r = .20, p < .001$ and $r = .18, p < .01$, respectively) and anxiety ($r = .22, p < .001$ and $r = .18, p < .01$) attitudes toward technology.

DISCUSSION

The present study aimed at investigating the relationship between media and technology usage and attitudes, as well as physical and mental well-being in youth. More precisely, the focus was on eating-related variables (healthy eating, BID, and ED risk), TEI, and psychopathology indicators (stress, anxiety, and depression).

Both higher BID and SCOFF scores were positively correlated with the use of text and WhatsApp messaging, social media use, and attitudes that reflect anxiety and dependence on technology. This result agrees with a recent meta-analytic review that found a positive association between extent of use of SNSs and extent of internalization of a thin body image ideal, suggesting that the ability to interact with appearance-related features online and be an active participant in media creation is associated with BID (Mingoia, Hutchinson, Wilson, & Gleaves, 2017). In addition, recent findings showed that viewing thin body images on Facebook predicted higher baseline BID and was associated with higher EDs risk than viewing the same images on conventional media in female university students (Cohen & Blaszczynski, 2015). Similarly, research has shown that young adolescent Facebook users had significantly higher body image concern compared to nonusers (Tiggemann & Slater, 2013), and Facebook use was associated with the maintenance of weight and shape concerns and state anxiety compared to alternate Internet activities (Mabe, Forney, & Keel, 2014). This may be explained by the Social Comparison theory, which postulates that people are more likely to compare themselves to similar others. As social media forums such as Facebook or Instagram involve one's peers, they may therefore have more impact on BID and the development of EDs than other forms of media. Moreover, the fear of negative feedback from peers and family and the anxiety toward how one is perceived by society were shown to be the most significant contributing factors to the development of EDs (Haworth-Hoepfner, 2000). This might in turn explain the higher SCOFF scores in social media users. In fact, more frequent Facebook use was found to be associated with greater disordered eating in women (Mabe et al., 2014), and Instagram use was linked to increased symptoms of orthorexia nervosa (Turner & Lefevre, 2017). Together these results emphasize the important aspect of appearance

comparison in social media images, which may trigger or worsen BID and EDs.

The correlations between BID and SCOFF scores and the use of text and WhatsApp messaging might be explained by the concept of self-esteem. Research has shown that individuals with low self-esteem use instant messaging more frequently (Ehrenberg, Juckes, White, & Walsh, 2008) and have higher BID scores (Tiggemann, 2005) and ED risk (Gual et al., 2002) compared to those with high self-esteem.

Unhealthy eating habits were positively correlated with technology use in general, and more particularly with mobile phone multimedia use (music, pictures, and video). These results concur with numerous studies in which screen time was associated with poor eating habits (Cox, Skouteris, Rutherford, Fuller-Tyszkiewicz, & Hardy, 2012; Kenney & Gortmaker, 2017; Pagani, Fitzpatrick, Barnett, & Dubow, 2010; Rosen et al., 2013). Previous findings, similar to ours, have shown that using smartphone and tablets for more than 5 hr/day is associated with increased sweet beverage consumption in adolescents (Kenney & Gortmaker, 2017), and high mobile phone use is associated with consumption of sweets (Delfino et al., 2017).

Correlations between TEI and social media subscales were weak but significant as expected. Although global TEI only related to the friends and followers' subscale, TEI factors correlated with different subscales. As anticipated, self-control was associated with technology and social media use. This is in line with the idea that poor emotional regulation and impulsiveness are at the roots of excessive technology use (Cao, Su, Liu, & Gao, 2007). An explanation of the positive relationship found between emotionality and friends and followers is that this TEI factor encompasses empathy and relationships, in addition to perception and expressions of emotions, which are all key factors when communicating with friends. Sociability was also positively related to friends and followers, as well as to text and WhatsApp subscales, which is consistent with the idea that individuals who prefer social connections and networking, and are adamant at the emotion management of others, might benefit from online friendship and communication. It might be the case that emotionality is linked to close online friendships and high quality of interaction, whereas sociability relates to having more online friends and followers as well as greater text and WhatsApp use. Taken together, these results contradict previous findings that point out that some of the underlying factors of smartphone use are poor social skills, social anxiety, and loneliness, even though these factors have been recognized in the literature as correlates of smartphone addiction (Enez Darcin et al., 2016). Well-being was also positively related to text and WhatsApp subscales. Self-esteem is one of the aspects covered by this factor; thus, this finding somehow challenges the idea that individuals with low self-esteem use instant messaging more frequently (Ehrenberg et al., 2008). Other well-being facets are happiness and optimism, which could be encouraging individuals to share through texts and WhatsApp messages. Taken together, these findings suggest

there is an intricate relationship between TEI and technology use, depending on the TEI factors and specific subscales considered.

Stress positively correlated with using mobile phone multimedia (music, pictures, and videos) and Internet search subscales. Individuals under stress could engage in these activities somehow compulsively, as they may lack self-regulatory skills to cope differently. For example, in a study conducted by Jun and Choi (2015), adolescents' academic stress was related to Internet addiction through negative emotions. It is also possible that Internet overuse predisposes individuals to experience higher stress levels (Akin & Iskender, 2011). Surprisingly, depression and anxiety did not significantly relate to any of the technology use subscales, but they correlated positively with anxiety attitudes toward technology, which could potentially explain many aspects of Internet overuse (Tsai & Lin, 2001). However, they also related to negative attitudes toward technology, and stress in particular was also linked to positive attitudes. These links between psychopathology indicators and both adaptive and maladaptive attitudes toward technology emphasize the complexity of such a relationship.

Limitations and Recommendations for Future Research

One of the limitations of the present study is that it is correlational in nature; therefore, it is not possible to determine causality. A key role of forthcoming studies is to investigate the directionality of the relationship between technology use and physical and mental well-being, ideally through longitudinal and experimental designs. Even though we explored the participants' attitudes toward technology, the subscale anxiety toward technology is not sufficient to capture the complexity of an unhealthy use of technology, which can be characterized by intrusive thoughts about online activity, withdrawal symptoms, and technology-related impulsiveness. Thus, future studies could further study the role of psychological dependence in pathological technology use.

To capture the full complexity of adolescents' technology usage, future work can investigate parental views of their adolescents' technology usage and study other communities, such as families. It may also be worthwhile to ask adolescents about the location of their technology usage. This will help determine where addicted adolescent users are spending the time they dedicate to technology usage and how that behavior can be controlled.

CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

The present study adds to the growing evidence supporting a significant impact of technology use on physical and mental well-being. Using mobile phone multimedia (music, pictures, and videos) correlated with unhealthy eating and stress. Social media use correlated with BID, EDs risk, and self-control. In

addition, anxiety and dependence toward being without technology correlated with BID, EDs risk, depression, and anxiety.

The present results warrant the adoption of strategies to reduce the deleterious effects of technology use and dependence among youth. Public health and community nurses might play a major role in teaching adolescents more adaptive ways of using social media or reducing exposure to it. Previous work has shown that setting limits and boundaries on technology use during childhood and adolescence was associated with lower levels of depression (Bickham, Hswen, & Rich, 2015).

Our results showed that self-control was associated with technology and social media use. This is in line with the idea that lack of emotion regulation and impulsiveness are at the roots of technology use, and individuals who are impulsive and have difficulties in regulating their emotions tend to overuse technology (Cao et al., 2007). Therefore, psychiatric nurses and college nurses may need to create awareness campaigns and develop programs in university and school settings that teach adolescents how to regulate themselves, follow directions, develop their planning abilities, and foster self-discipline, and to create an environment where self-control is consistently rewarded. Furthermore, nurses might play a vital role in training health professionals and health personnel in raising awareness about the effects of technology on physical and mental well-being among youth, especially in the current context.

Our findings illustrate the need for professional nurses to understand the influence of the media on adolescents' views of their body image and to incorporate protocols for assessment, education, and counseling of adolescents on the healthy usage of media into their pediatric clinical practice. Nurses also need to educate parents to be aware of the potentially harmful effects of technology and help them implement strategies with their children to reduce their overall screen time.

Professional nurses need to join efforts with their colleagues from other disciplines, such as nutritionists and psychologists, to accommodate the complexity of the problem in preventing, detecting, assessing, and treating technology dependence-related concerns. Furthermore, targeting social media as a platform for intervention and prevention programs to decrease BID, EDs, depression, and anxiety may be helpful. As such, technology may become part of the solution rather than part of the problem. **WVN**



LINKING EVIDENCE TO ACTION

- Strategies should be adopted to reduce the deleterious effects of technology use and dependence among youth.
- Healthcare providers might play a major role in teaching adolescents more adaptive ways of using social media or reducing exposure to it.

- Parents should be educated about the potentially harmful effects of technology and the necessity to implement strategies to reduce their children's overall screen time.
- Professional nurses, nutritionists and psychologists should join efforts to accommodate the complexity of the problem in preventing, detecting, assessing, and treating technology dependence-related concerns.
- Social media can be targeted as a platform for intervention and prevention programs to decrease body image dissatisfaction, eating disorders, depression and anxiety.
- Future research should further study the role of psychological dependence in pathological technology use.

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