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Risk assessments of virtual interactions on Saudi families

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Family relationships are the basis for a stable family atmosphere. Now with the internet, which has become a tangible part of our lives, membership of virtual communities, including social networks, has grown. It has created fundamental changes in the structure of social relationships and human interaction, forming a new framework of virtual interactions that transcend international borders. Due to their significance, unavailability, availability, confidentiality, ease of use, and intrusive nature through interaction and sharing, virtual communities now extend beyond the individual and related level of risk. This study aimed to assess the cultural and behavioral risks of virtual interactions for Saudi families and their level of incidence and likelihood. It belonged to descriptive studies, using the social survey for a sample (1524) from Hail region families between 15 December 2022 and 31 January 2023, and was based on the list of cultural and behavioral risks of virtual interactions. Results showed that the most dangerous social networking sites for Saudi families were TikTok, Twitter, Snapchat, YouTube, and Instagram respectively. Matrix results showed that 66.7% of virtual interaction threats have a high severity and likelihood, namely: adopting atheistic ideas, spreading the thought of hate, undermining the values of the Saudi family, and adopting ideas that incite violence from cultural threats, privacy hacks, cyber-bullying, fraud, violence, social isolation and cybercrime from behavioral threats. The study recommends adopting a social risk management (SRM) concept, especially regarding risks to family, because it is a new dimension of social protection.

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Introduction

The internet has become a reality in our lives, it has formed a new space, Cyberspace; a new framework for unlimited and unrestricted transnational social relations. It has played a role in forming relations that extend outside the limits of the physical boundaries of face-to-face interactions. Users thereof, especially those of mutual interests, have created groups named “Virtual Communities” as a new form of human interaction (Bishop, 2000, p. 472). One of the most invasive virtual communities is social networks. User numbers have grown because they enable a person to participate in more than one group according to his/her interests and hobbies. Membership in such communities has helped increase the range of participation, opinion sharing and information sharing, thus creating a whole new aspect of social and human relations (Wellman et al., 1996, Laine, 2006).

Virtual interactions are the product of virtual communities, as human relations, both virtual and actual, represent the emotional and cognitive media through which a person builds his/her values and goals of life. Whether such relations are strong or weak, positive or negative, shallow or deep, serious or light, family or relative-related, friendship or interest-related, each of those relations will have an impact on the individual's attitudes, values, goals, and behaviors. Therefore, the individuals' use thereof is changing all the time, requiring them to be alert to danger and the behaviors related to the internet and its safe use (Valcke et al., 2011). Thus, there is deep and growing concern regarding merging technology in our lives and our failure to keep boundaries between the public and private aspects of our lives (O'Sullivan, 2012). The unprecedented achievements in software, electronics, communication systems, and the internet have led to unprecedented health, psychological, and social risks, especially now that the internet is a continuously evolving medium, with new properties and roles.

Individuals' virtual interactions are full of many risks, for they unload their energy, thoughts, and suppressed desires there. They isolate themselves for long hours in front of computer screens and mobile phones. All this might lead to behavioral changes, for example, lying to hide his/her real identity or requiring a face-to-face meeting with the other party of the virtual interactions hip. The change might lead to Chat addiction, indulgence in pornography, becoming a victim to professional chatters who hunt down those with problems in their environment in order to convert their religion or convince them of atheism, lure them into lower levels of pornography, or recruit them in the service of enemy countries. The danger of such situations is their lack of awareness of the risks they might face through their virtual interactions (Halawa and Abdel Atti, 2011, pp. 5–6).

Literature review

Since the mid-1990s, when the use of the internet became more widespread, the increase of problems in cognitive, emotional, and psychological development has been recognized as a legitimate psychological disorder caused by internet addiction (Price, 2011). Adams (2016) highlighted the significance of cyber-relational addiction, amongst several internet addiction variants, as many internet users have become more attached to relationships made online than those they have made in real life. Internet addiction is characterized by behavior such as: spending a disproportionate amount of time thinking or worrying about the internet and other digital media; losing all track of time whilst using the internet; craving more and more new applications; exhibiting withdrawal symptoms and mood swings when unable to use the internet; and inability to deal with the negative consequences of over-use of the

internet, which lead to deteriorating social relationships and increased risk of failure in work and study. These problems are indiscriminate, affecting women and men, single or married, to the same degree. However, it is noted by Nowak et al. (2022) that people who work, do not study, and are residents of large and medium-sized cities, are more likely to use the internet pathologically than those who study and live in small cities or rural areas.

Previous studies have shown the negative impact of virtual interactions on an individuals' life; depression (Caplan, 2002; Paudel et al., 2021), impulsivity (Gonzalez, 2002; Patil et al., 2021), psychological loneliness (Nalwa and Anand, 2003; Cao et al., 2022), low self-esteem (Caplan, 2002; Kim et al., 2022), poor emotional and social skills (Engelberg, 2004; Esen et al., 2021), decreased academic performance (Alinejad et al., 2022; Lu et al., 2022), sleep disorder (Tereshchenko et al., 2021) and health problems such as electroencephalogram “EEG” (Demin and Poskotinova, 2022). Also, there were many sexual threats, Seto, 2013a referred to internet-facilitated sexual assault, and sexual behavior as both a virtual and actual risk for peers through social networks. Lwin et al. 2012 considered online harassment as a world-wide spread phenomenon with particular impacts on people who tend to get involved in risky online behaviors. Vandebosch and Van Cleemput, 2009 discussed cyber-bullying among youth. Rice et al. 2010 showed the correlation between sexual health and using the internet including social networks. So, many previous studies have encouraged e-safety, privacy warnings, and privacy seals on risk assessment and online behavior (Larose and Rifon, 2007).

With the spread of the internet and its overuse becoming more of a concern, new terms have been coined to describe the phenomenon. For example; “Internet addiction, internet addicts, Internet Addiction Disorder, pathological internet use, problematic internet use, maladaptive patterns of internet use, computer-medicated communication addicts, computer junkies” and so on. Internet addiction can be described as overuse of the internet and an inability to limit or control internet use causing an individual problems in their daily life due to physical, psychological, and social problems caused by the addiction (Lu et al., 2022).

Culture is fundamental to the way people communicate, their values, and therefore how they use the internet. However, internet use can be problematic for many people of many cultures across the world. This is concerning because, until now, very little cross-cultural research on the subject of internet addiction has been carried out (Panova et al., 2021).

Al-Shehri (2013) monitored the impact of negative virtual interactions on Islamic intellectual security within Saudi society, which was characterized by the destabilization of beliefs and promotion of extremist ideas, and the systematic destruction of some sites of the system of moral values, family values, work, and society (Al-Shehri, 2013). This was also discussed by jurists in 2016 regarding the role of social networks in promoting extremist ideology and recruitment for terrorist groups. Bouhleh's (2016) study demonstrated the negative impact of virtual interactions on the socialization process, which caused the spread of conflicting messages, leading to a social imbalance in the upbringing of children, weak social ties, feelings of alienation from the family, and high rates of violence and crime. The limitation of communication and dialog between family members, the lack of awareness of how to rationalize leisure time, and the addition of one or both spouses to the internet, may lead to a decline in family members' participation in social events, or even marital infidelity following a period of online communication and courtship.

Studies have also monitored wide-ranging changes within Muslim families, particularly Saudi families, (changes in the characteristics of family members and their social roles, changes in the strength of family interactions, changes in quantitative and qualitative interactions in the vicinity of the neighborhood, changes in family functions and their crossover, changes in family values) during recent decades. The impact of the presence of this ever-evolving mediator “the internet”, which has formed a new dimension in human relations, has threatened family security in all its aspects, including relationships, values, and thought, as well as threatening the Islamic community as a whole. The security of society stems from the security of the family, and dangers are manifested in (sex, drugs, violence, crime, extremism, terrorism, atheism, etc.), especially since we are a society that is not ready to deal with technology in a way that matches its goal.

Huge transformation has taken place within Saudi society as a result of the oil boom, and the resulting social and economic change has caused a technological boom facilitating cultural openness and boosting material wealth. The standard of living has improved and new behavioral patterns have taken hold as consumerism prevails. For example, the majority of individuals are now able to buy the latest smart devices. These structural changes have affected all societal systems, clearly impacting individuals and groups, especially that of the family system—its characteristics, components, functions, and roles (Al-Hamid, 2007; Baqir, 2022).

The scale of change within Saudi society over the past five decades cannot be overstated. Major lifestyle changes have taken place, especially in the identities of many individual Saudis who have shifted their worldview from one of looking inward to being more open. This could be a result of the development in communication technology and the wide-reaching use of social media which conflicts with traditional Saudi values and has caused many traditional social controls to be broken. From a more optimistic viewpoint, it could be said that social media, with its various programs, has contributed towards breaking the chain of isolation that Saudi society was experiencing. As a result of these programs, society has become a prisoner of social media and interacts with it and it interacts with it, influencing and being affected. Social media programs represented a type of Freedom of social movement within virtual buildings.

Statistics of Saudis' use of the Internet in 2021

The use of the internet by Saudi individuals increased to 92.5% in 2021, according to the results of the survey of the use of information and communication technology for families and individuals for the year 2021. It recorded an increase in the percentage of individuals using the internet, an increase of 1.8% from 2020, the male use rate was 94.4% and females' use was 90.8%, at the families' level, the percentage of their use of the internet was 96.3%. The rate of participation of individuals (15 years and over) in social networks constituted 93.9% of the total internet users, and this field is considered the most common among the areas of internet use. The percentage of individuals (15 years and over) who purchased goods and services via the internet reached 53.0% of the total number of internet users (General Authority for Statistics, Kingdom of Saudi Arabia, 2021) (Table 1).

Due to the significance of virtual interaction, its inevitability, availability, confidentiality, ease of use, intrusive nature, the characteristics of interaction and sharing, risks, and extension beyond actual individual relations, there was more preference for virtual interactions than real relations amongst an increasing number of Saudi individuals and families. So, the subject of this

Table 1 Relative distribution of individuals (15 years and over) who use the internet in 2021 at the level of the Kingdom.

Times of use	Gender		Total
	Male	Female	
At least once a day	88.76	87.92	88.35
At least once a week but not daily	2.65	3.18	2.90
At least once a month but not weekly	0.51	0.49	0.50
At least once in the last 3 months but not monthly	1.50	1.62	1.56
I do not know	6.59	6.79	6.69
Total			100

Source: General Authority for Statistics, Kingdom of Saudi Arabia (2021).

study is determined to assess the risks of virtual interactions in the Saudi family. Although all kinds of virtual interaction risks were almost proven in most scientific studies, there was little research across Islamic and Arabian cultures on the subject of virtual interaction risks. So, this study focused on two types; the cultural and behavioral risks in Saudi families.

Questions

Main Question: What are the cultural and behavioral risks of virtual interactions in the Saudi family?

Sub-Questions:

1. What is the level of cultural and behavioral risks of virtual interactions in the Saudi family?
2. What is the occurrence likelihood of cultural and behavioral risks of virtual interactions in the Saudi family?

Definitions

A virtual community is a group of people, brought together online by a common interest, problem, or task. The community uses an online platform for social interaction to support each other in their common interests, building trust and developing ideas, bound by implicit and explicit codes of behavior (Leimeister et al., 2004, p.1). Virtual interactions in this study means “the interaction between individuals via social networks, through actions including; post, share, invite, block, like, create, call, comment, and poke, either public with virtual friends on the timeline or in closed groups via chat or messages”.

Risk—originally meaning the probability of the possible positive or negative outcomes of events- has come to be associated, in social work at least, only with negativity and the relative variation in adverse outcomes. Risk can also be defined as “the nature, likelihood, frequency, duration, seriousness, and imminence of an offence” (Barry, 2007, p. 6). Risk in this study is “a state in which an individual feels and realizes the possibility of harm due to virtual interaction during a short period, with the inability to control such harm”. It should be noted that there is a distinction to be made between ‘risk’ and ‘danger’. Risk means ‘the possibility of beneficial and/or harmful outcomes, and the likelihood of their occurrence in a stated time scale’, while danger refers to a source, situation, or action that causes harm to a person.

Risk assessment is subjective involving a combination of science and judgment in order to make a comprehensive assessment of the level of potential risk in a given situation. The assessment takes into account psychological, social, cultural, and political factors (Sloyic, 1999, p. 689). According to Smethurst (2011, p.

169) risk assessment is an estimation and evaluation of the likelihood of risk, which may result in beneficial or harmful outcomes, and the likelihood of its occurrence within a stated period of time. Barry (2007, p.6) identified two models of risk assessment; 1. The risk-taking model (where risk is assumed to be positive, and where assessment focuses on mental wellbeing, as well as human rights, abilities, choices, and participation); and 2. The risk minimization model which targets those most at risk focuses on physical health, danger, control, and powerlessness. The purpose of a risk assessment is to identify the likelihood and effect of possible risks posed by a particular situation, event, or decision (Smethurst, 2011, p. 169). Risk assessment in this study is “a process of assessing the risks individuals might undertake because of their virtual interactions”.

Family is defined by Sonawat (2001) as “a unit of two or more persons united by marriage, blood, adoption, or consensual union, in general consulting a single household, interacting and communicating with each other”. Rahul (2013) defined family as “People related by marriage, birth, consanguinity or legal adoption, who share a common home and financial resources on a regular basis.” ‘Saudi family’ in this study refers to ‘a unit of two or more members, by marriage or blood, living together and performing a set of roles and functions that achieve family stability’.

Theoretical framework

The addiction to virtual interaction is explained in this study through the cognitive behavioral approach. The main theme of the cognitive behavioral approach is not only that what happens to us that affects our mood and behavior, but also how to interpret such events and our beliefs of the world. So “if people think right they will do right”; events often happen because of beliefs and emotional consequences stem from the belief in the event not in the event itself (Bennett, 2002, p. 93, Tavris and Wade, 1997, p. 266, Milner and O’Byrne, 2002, p. 169, Mcleod, 2003, p. 135). According to the cognitive-behavioral model, individuals’ addiction to virtual interactions is due to their perception and interpretation of such relations as significant to them, for example, these relations are always available at any time or place; without obligation or shame, are confidential, and have no restrictions. These interactions are a chance to express feelings without the burden of forming face-to-face relations, they do not require communication skills, can be terminated anytime, the identity can be masked, and they might grow into in-person relationships. So, individuals’ feelings about these interactions mean they are easily attracted towards them for the pleasure, happiness, and satisfaction they get from them. Sometimes their success in these virtual interactions can be a factor in their success in actual relations as they are a kind of training that helps them avoid actual relations depression, especially the adolescents’ desire to enter a new attractive world without any control or limits.

Risk society is an important concept related to the topic of this research. Risk society describes the way in which a modern society adapts and organizes itself according to comprehended or anticipated risk. A risk society looks to the future with a view of keeping itself prepared and safe despite potential dangers (risk) caused by its own development and modernization such as pollution, newly discovered illnesses, and crime. Giddens (1999) and Beck (1992) explain that humans have always been subjected to a level of risk, but that these have not been perceived as man-made, for example, natural disasters (external risk). However, modern societies are exposed to risks that are the result of the modernization process itself (manufactured risk).

Virtual interactions are manufactured as a result of societal development and modernization, especially within the field of communication technology, and can be characterized by the human agency involved in causing its risks as well as mitigating those risks. Social relations have already shifted in response to manufactured risks and reflexive modernization, affecting quality of life. Beck asserts that large-scale risks have a “boomerang effect,” where the individuals who produce the risks will also be exposed to them.

Virtual interactions are considered manufactured risks as they are the product of human activity, so, according to Giddens and Beck, it is possible for societies to assess the level of risk virtual interactions pose now and in the future. This reflexive introspection has the potential to alter the planned activities themselves.

Another concept important to this research is the concept of liquid modernity. In his book, Bauman (2000) examines how society has become increasingly ‘light, liquid and software focused’ because of the increased level of mobility and change in relationships, identities and economics, which has moved society away from a previously ‘heavy, solid, hardware-focused’ modernity.

Bauman (2000) goes on to explain the profound changes liquid modernity has brought about to all aspects of the human condition. Societal culture and human relations have always faced change and challenges in preserving values, customs, and traditions. The shift from ‘solid’ to more ‘liquid’ modernity has transformed these values into more variable, dynamic, flexible values that take multiple and renewable forms (Bauman, 2000). He says that the most significant fluid transformation in human relations is the prevalence of virtual interactions within modern society. These have caused a deviation from the traditionally held values of Saudi society under the pretext of liberation, individualism, innovation, and development towards globalization and renewed technological modernization.

Methodology

This paper belonged to the descriptive research, with the aim of assessing the cultural and behavioral risks of virtual interactions for Saudi families, their level of incidence, and likelihood. It used the social survey method for a representative sample of families in the Hail region, which amounted to (1524) families (fathers = 155, mothers = 145, sons = 474, and daughters = 750, from different families) between 15 December 2022 and 31 January 2023, according to the estimates of the latest Saudi families’ income and expenditure survey 2018 (General Authority for Statistics, Kingdom of Saudi Arabia, 2021).

Research instrument

List of cultural and behavioral risks of virtual interactions affecting Saudi families’ traditions. An overview of the risks was first identified by reviewing literature on the subject which included the effects on Arab society, Saudi society in particular. Additionally, an initial survey was conducted on a random sample of Saudi families, which numbered (100 families). The resulting list included (15) risks, distributed between the (2) main dimensions; cultural risks (6 items) and behavioral risks (9 items). The validity of the list was tested through the correlation coefficients (0.736**). The reliability of the list was tested through Cronbach Alpha (0.955). The results were statistically significant at the level of significance of (0.01).

Results and discussion

The results showed (Table 2) that the most dangerous social networking sites in the opinion of the research sample of Saudis,

Table 2 The most dangerous social networking sites.

Social networking sites	Frequency						Descriptive statistics		
	Very high	High	Moderate	Low	Nil	Don't know	Mean	Std. deviation	Ranking
1. Instagram	313	252	373	307	187	92	2.95	1.490	5
2. Facebook	265	124	226	354	296	259	2.30	1.681	7
3. Twitter	728	316	207	110	97	66	3.83	1.463	2
4. WhatsApp	202	180	275	366	418	83	2.43	1.467	6
5. Snapchat	642	331	251	108	140	52	3.70	1.468	3
6. Messenger	225	105	190	296	301	407	1.97	1.731	10
7. Tiktok	906	232	132	91	101	62	4.03	1.472	1
8. Skype	259	116	198	272	257	422	2.07	1.799	8
9. Line	239	131	205	249	244	256	2.02	1.802	9
10. Pinterest	187	132	166	269	350	420	1.87	1.696	11
11. linked in	206	105	199	246	287	481	1.85	1.748	12
12. YouTube	434	290	277	211	225	87	3.15	1.597	4

ranked from first to fifth, are TikTok, Twitter, Snapchat, YouTube, and Instagram, respectively. While WhatsApp, Facebook, Skype, Line, and Messenger ranked from sixth to tenth respectively. Pinterest ranked eleventh, and LinkedIn the twelfth and last.

Here it appears that the most dangerous sites and applications for the Saudi family are of a more interactive nature such as Twitter, Snapchat, Instagram, as well as YouTube with all its features such as publishing unlimited videos, allowing them to be saved and shared, adding various effects to them, as well as creating private channels. Perhaps the danger lies in the lack of restrictions in publishing videos, which is unlimited spatial and temporal, as well as unlimited political, social, ethical, and behavioral content, which poses a great danger to children and adolescents intellectually and behaviorally. This is reflected in the Saudi family and what it does in the social upbringing of its children. It is not limited to children but extends to young people, where the possibility of extremism, terrorism, and atheism is rampant, and to husbands and wives, where conflicts, disputes, and disagreements result from comparisons with other families that publish the most intricate details of their daily lives, real or fabricated.

TikTok, which ranked first with an average of (4.03), is an easy-to-use social platform, with short (15 s) video content. It is associated with a number of risks, including allowing those <13 years old to open personal accounts, circulation of unsafe video content, and bullying. This was confirmed by Lamouri and Nahal (2022) who described the dangerous impact TikTok has on the value system of adolescents, where fun and entertainment transgressed to moral decay, especially when the family was unaware. Himeur (2022) also found TikTok a threat to the value system of some adolescent girls in Islamic societies, especially regarding modesty, respect, and honesty. The Amofy study (2022) also found a high level of personal, behavioral, social, and value risks resulting from children's use of social networking sites, with a statistically significant relationship in the level of risk a child's excessive use of social networking sites has according to the variable age, time period, and type of content viewed.

The risks of social networking sites and applications do not lie only in their unsafe content, nor their temporal and spatial limitations, but in the fact that some of them generate great income for their users of pages and channels, and the greater the number of followers and participants of the content, the greater the income of the account or channel or page owner. Undoubtedly, a large percentage of users of these sites and applications are attracted to content that may be trivial, deviate from the norm,

transgress the personal, social, and religious boundaries of others, or carry a challenge or competition between children and adolescents that may lead them to commit suicide, for example, dangerous electronic games such as the blue whale and Mary. Additionally, users may suffer or perpetrate harassment, extortion, and electronic crimes of all kinds.

Indeed, social media platforms are an ever-evolving and growing medium, and as their advantages grow, their risks grow. Therefore, risks must always be specifically followed up to reduce them by developing plans, programs, and different scenarios to deal with them. It is a virtual community that will not stop growing, and realizing this drives us to deal with it effectively, taking advantage of its benefits and reducing its risks at the same time.

The results (Table 3) showed an increase in the general average risk level of virtual interactions in the Saudi family (3.64). The respondents believe that ten of the fifteen risks are of a high level and that five of them are of a medium level. By analyzing the level of cultural risks, it appears that four risks are of a high level, namely: adopting ideas that incite violence; adopting atheistic ideas; spreading the thought of hate, and undermining the values of the Saudi family, and two risks of medium level, namely: adoption of terrorist ideas and rejection of the idea of national identity. As for the behavioral risks, it was found that six risks were of the high level, namely: privacy hack; cyber bullying; fraud; violence; social isolation, and cybercrime, and three of the risks were of the medium level, namely: suicide attempt; joining terrorist groups, and drug addiction.

Risks of thought are among the types of risks that worried the research sample, whether related to violence, atheism, hatred, or terrorism and confirmed by several studies carried out by Saudi researchers in this field. Al-Shehri's study (2013) presented the impact of the internet on the recruitment of young people to terrorist groups, persuading them to adopt the atonement ideology, and the systematic destruction by some sites of the system of moral values, family values, and work. Al-Fuqaha's study (2016) also emphasized the role of social networks in promoting extremist ideology.

Perhaps the significance of the risks of thought is because the Arab world has, in recent decades, faced a crisis of a complex nature, a crisis of both thought and reality spanning various cultural, social, and political levels. Given its pivotal role, whether in terms of creating the crisis, or formulating a way out of it, security is a requirement for every nation, and intellectual security comes at the top of the list of important goals. One of the components of a stable life is for people to live in their countries

Table 3 Levels of cultural and behavioral risks of virtual interactions in Saudi families.									
Type	Risks	Frequency					Descriptive statistics		
		Very high	High	Moderate	Low	Nil	Mean	Std. deviation	Level
Cultural risks	1. Adopting ideas that incite violence	455	302	390	230	147	3.45	1.314	High
	2. Adopting terrorist ideas	362	258	387	293	224	3.16	1.370	Moderate
	3. Adopting atheistic ideas	636	302	269	155	162	3.72	1.371	High
	4. Spreading the thought of hate	639	365	253	134	133	3.82	1.300	High
	5. Undermining the values of the Saudi family	847	238	166	123	150	3.99	1.369	High
	6. Rejection of the idea of national identity	425	222	329	234	314	3.14	1.490	Moderate
Behavioral risks	7. Privacy hack	735	326	221	103	129	3.95	1.290	High
	8. Cyber-bullying	877	303	173	63	108	4.17	1.210	High
	9. Suicide attempt	429	291	324	263	217	3.30	1.404	Moderate
	10. Joining terrorist groups	366	215	327	382	334	3.00	1.471	Moderate
	11. Drug Addiction	389	252	346	281	256	3.16	1.421	Moderate
	12. Fraud	816	290	202	93	123	4.04	1.280	High
	13. Violence	525	329	330	183	157	3.58	1.339	High
	14. Social isolation	902	264	157	102	99	4.16	1.234	High
	15. Cybercrime	870	257	196	81	120	4.10	1.270	High
Average mean							3.64		High

0-1.67 = Low; 1.68-3.33 = Moderate; 3.34-5.0 = High.

and communities safe and secure in the place of their origin, their specific culture, and their intellectual system. Intellectual extremism is “a behavior by an individual that contradicts the social, religious, and political norms of the environment in which he lives, as he moves away, in one way or another, from the behavioral or intellectual moderation in which individuals of his age live in his society” (Al-Jughayman, 2005, p. 191). It is “an attempt to impose a certain opinion, thought or reality by using violent and forceful methods, with a degree of planning, organization and implementation” (Al-Saeedin, 2005, p. 26).

As for the risks related to the Saudi family, Bouhlel’s study (2016) presented the negative impact of the internet on the socialization process, which led to the transfer of conflicting messages, causing a social imbalance in the upbringing of children, weak social ties, and also led to the individual’s feeling of alienation within the family, the high rates of violence and crime, and the confinement of family relations. The family’s preservation of its relationships, values, and beliefs from the dangers of the internet is to protect the various aspects of its psychological, social, health, economic, cultural, religious, and spiritual life, in order to achieve its goals as a social system, an element of social construction and a component of social security. Especially in light of family security that is affected by various economic and social variables, cultural, legislative, political and technological, local and global. Family security relates to three aspects, namely: the security of family relations “the security of family ties that bind the parts of the family system together, which enable it to stabilize its structure and perform its functions”; the security of family values “protecting and stabilizing family values, so that they can accommodate development and modernization, without being affected by the imbalance that threatens the strength of the family, and keeps it away from achieving its goals”; security of family thought: “The integrity, moderation and balance of family thought in various religious, social and political issues of the family and society.”

The results of many previous studies agree with the results of the study which showed that there is a high level of behavioral risk attached to virtual interaction. The study of Pujazon et al. (2012), which analyzed adolescents’ profiles on MyLoL.net (a teen dating Web site), found that 752 publicly viewable profiles of adolescents aged 14–18 were positive for five potential content risks: sex, alcohol, drugs, cigarettes, and violence. 27.7% of

profiles contained risk-related content: 15.8% sexual behavior, 13.8% alcohol use, 1.6% drug use, 6.8% cigarette smoking, and .9% violent activity. Online harassment is becoming a widespread phenomenon with significant implications for adolescents, who are a high-risk group due to their tendency to engage in high-risk behavior online (Lwin et al., 2012). Rice et al. (2010) led a study of adolescents’ internet usage to determine the link between sexual health and the use of social networking websites such as My Space and Facebook. Results showed that 96.5% of those surveyed were regular internet users; they reported spending large amounts of time online and recently engaging in exchange sex, associated with online dating. However, youngsters who had more connections to their family members online were less likely to practice exchanging sex.

Vandebosch and Van Cleemput (2009) investigated the issue of cyber-bullying amongst adolescents. In a survey taken of 2052 primary and secondary school children, it was found that cyber-bullying amongst youngsters is a significant problem. Those who were found to have bullied someone via the internet or by text in the last three months were usually younger, had been victims of or witnessed cyberbullying, and were more likely to have been the perpetrators of playground bullying previously. Additionally, studies have determined that youngsters subjected to cyber-bullying or bullying by text during the last 3 months have become more dependent on the internet, developed feelings of unpopularity, and subsequently take more risks when using the internet (Christofides et al., 2012). The study of Valcke et al. (2011) presented an overview of internet risks and suggested approaches to fostering safe internet behavior. The study showed that although risky behavior on the internet is low, the use of parent and teacher controls was minimal and had little effect in reducing the incidence of risky behavior.

The results showed (Table 4) a high likelihood of cultural and behavioral risks in Saudi families. The general average was (3.54). Respondents believed that 11 of the 15 risks were highly probable and that five of them were moderately likely. By linking the analysis of the two Tables (3, 4), it is clear that respondents substantiate a high level of cultural and behavioral risks of virtual interactions in Saudi families, as well as a high likelihood.

The Matrix (Table 5) showed that 66.7% of virtual interaction risks have a high severity and likelihood, which are: adopting atheistic ideas, spreading the concept of hate, undermining the

Table 4 Likelihood of cultural and behavioral risks in Saudi families.

Type	Risks	Frequency					Descriptive statistics		
		Very high	High	Moderate	Low	Nil	Mean	Std. deviation	Likelihood
Cultural risks	1. Adopting ideas that incite violence	407	278	486	185	168	3.37	1.294	High
	2. Adopting terrorist ideas	293	251	481	240	259	3.05	1.330	Moderate
	3. Adopting atheistic ideas	491	303	419	130	181	3.52	1.334	High
	4. Spreading the thought of hate	531	351	376	137	129	3.67	1.268	High
	5. Undermining the values of the Saudi family	656	296	268	139	165	3.75	1.372	High
	6. Rejection of the idea of national identity	354	263	390	214	303	3.10	1.424	Moderate
Behavioral risks	7. Privacy hack	689	353	261	94	127	3.91	1.270	High
	8. Cyber-bullying	750	326	358	72	118	4.00	1.244	High
	9. Suicide attempt	351	284	433	212	244	3.19	1.361	Moderate
	10. Joining terrorist groups	284	228	425	271	316	2.93	1.378	Moderate
	11. Drug Addiction	337	265	435	253	234	3.14	1.349	Moderate
	12. Fraud	692	320	286	94	132	3.88	1.287	High
	13. Violence	477	328	395	177	147	3.53	1.299	High
	14. Social isolation	796	309	217	97	105	4.05	1.240	High
	15. Cybercrime	771	290	261	81	121	3.99	1.267	High
Average mean							3.54		High

Low = 0-1.67; Moderate = 1.68-3.33; High = 3.34-5.0.

Table 5 Matrix of virtual interactions in Saudi family.

		Severity				
		Very high	High	Moderate	Low	Nil
Likelihood	Very high	None				
	High		1, 3, 4, 5, 7, 8, 12, 13, 14, 15 (66.7%)			
	Moderate			2, 6, 9, 10, 11 (33.3%)		
	Low				None	
	Nil					None

Risks opportunity = risks severity + risks likelihood.

values of the Saudi family, and adopting ideas that incite violence from cultural risks, and privacy hack, cyber-bullying, fraud, violence, social isolation and cybercrime from Behavioral risks.

Conclusion

Perhaps the high estimation of the level and likelihood of risks from the research sample indicates their awareness of the matter “the seriousness of virtual interactions”, especially since the research sample was from all family members: fathers 10.2%; mothers 9.5%; sons 31% and daughters 49%. But the majority of participants in virtual interactions were sons at 80%. It is the sons for whom we fear the risks of virtual interactions, yet they are the ones who estimate the high level and likelihood of the risks. This indicates two things, first: that the risks of virtual interactions are perceived by all members of the family, and second: that awareness of the high level of risks may not prevent high likelihood. Therefore, this requires intervention by scientific professionals such as psychologists and social workers with the aim to modify knowledge and behaviors associated with the safe use of the internet, linking it to specific goals and specific timings. If there is no way to use it, then let this use be regulated to the extent that we limit its risks, and that the virtual interactions of the individual do not exceed its actual relations. Perhaps, the risks of virtual interactions—cultural or behavioral—in the Saudi family rise with the increase in Saudi families’ use of the internet, which reached 96.3% of all Saudi families in 2021.

Cognitive behavioral therapy has revealed that despite the importance of virtual interactions to Saudi families, they are

aware of the dangers. Awareness of both the benefits and risks of virtual interactions demonstrates the need for developing programs that teach individuals to deal safely with virtual interactions and learn how to protect themselves online. This should include instruction on how to solve family problems, especially relationship problems, without the need for embarking upon virtual interactions that carry with them cultural and behavioral risks and could even result in replacing real family relationships with virtual ones.

An important point to make here and one which we believe calls for future studies, is that although some people are aware of the danger of something they undertake, they accept the risk and continue regardless. This behavior is exhibited in those with an addiction and may be due either to a distorted perception or to the fact that their behavior achieves their immediate achievement of an imagined goal.

The concept of liquid modernity demonstrates that a further transformation in relationships, from a ‘fixed/solid’ state to a ‘liquid’ state, has been accelerated by the spread of technology, especially communication software and the social media applications it has generated. Saudi society has opened the way for modernity; we can see this represented by the explosion of knowledge, creativity, and technology in the country. At this point it is important to clarify the difference between two things: “what we are trying to control,” (the dangers of virtual interactions) and “what we are not trying to control,” (progress, development, and innovation).

It is not only the level and likelihood of virtual risks that should be assessed but also an awareness of those risks amongst social

media users and those who indulge in virtual interactions. The risks encompass more than just unsafe content or a lack of temporal and spatial limitations, but extend to the fact that social communication is an ever-evolving and growing medium; as its advantages grow so do its risks. According to the concept of Risk Society, we are exposed to an abundance of manufactured risks as a result of modernization. Society is expected to continue growing and modernizing so, we must work towards implementing a systematic method of assessment for the occurrence and extent of those risks, which will enable us to manage and mitigate them through social risk management (SRM).

Social risk management (SRM) is effective when those who are responsible for handling and solving cultural and behavioral risks of virtual interactions are identified. For example, the division of responsibility should be between individuals, families, communities, and governments. Social risk management strategies can also be grouped into three categories: Prevention strategies, public measures to reduce the probability of cultural and behavioral risks of virtual interactions before they occur; Mitigation strategies, measures to decrease the negative impact of the cultural and behavioral risks of virtual interactions; Coping strategies, measures to relieve the burden of cultural and behavioral risks of virtual interactions after occurring. Therefore, SRM consists of public interventions to assist individuals, households, and communities to better manage risk and to provide support in the case of critical risks (Holzmann and Jorgensen, 2000). However, more should be done to support individuals and communities in understanding and applying the tools of social risk management (Mihălcioiu, 2014).

The relevance of SRM at the global level is summarized by (Berezina, 2018):

1. Increased risk of technogenic factors
2. So-called globalization, which has led to impoverishment
3. Hunger and wars, which have not subsided
4. Accelerated spread of epidemics and epizootics
5. Severe global and regional economic crises and the like.

Although the focus of this paper has been on Saudi families, the research has shown that the risks of virtual interactions affect many families in various other societies regardless of their characteristics. Although the sons of a family are usually the ones who are assumed to provide protection and ensure safe internet use amongst their family members, it is they who are at a high level and likelihood of risk when pursuing virtual interactions. This agrees with the findings of Moubarak's (2016) study on the dangers of virtual interactions for adolescents in Egyptian families which demonstrated the diversity of risks among adolescents' virtual interactions. These included ethical, cultural, psychological, educational, health, and family risks, and showed that adolescents are more susceptible to psychological risk yet less susceptible to behavioral risk. The study also showed that there is a highly significant correlation between being at risk and the ability to manage that risk. Adolescents appeared to have different estimations of risks and a good ability to manage all categories of risk except educational risk. The majority of risks; 93.7% are of medium degree and the majority of adolescents; 71.88% have a good ability to manage them.

This research demonstrated that the risks of virtual interactions do not only impact some societies but that all societies are at risk. Only the type and extent of risk differ according to the culture of societies. In addition, a number of studies have revealed the negative impact of virtual interactions on individuals such as; depression, psychological impulsivity, low self-esteem, loneliness, poor emotional and social skills, decreased academic performance, sleep disorder, health problems such as electroencephalogram and sexual threats (Caplan, 2002; Paudel et al., 2021; Gonzalez, 2002; Patil et al., 2021; Nalwa and Anand, 2003;

Cao et al., 2022; Caplan, 2002; Kim et al., 2022; Engelberg, 2004; Esen et al., 2021; Alinejad et al., 2022; Lu et al., 2022; Tereshchenko et al., 2021; Demin and Poskotinova, 2022; Seto, 2013a; Lwin et al., 2012; Rice et al., 2010; Larose and Rifon, 2007).

Data availability

The original contributions presented in the study are included in the article/Supplementary Material; further inquiries can be directed to the corresponding author.

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Author contributions

HFAM: Abstract, introduction, theoretical and conceptual framework, objectives, methodology, results, discussion, and conclusion. AA: statistical analysis.

Competing interests

The authors declare no competing interests.

Ethical approval

The studies involving human participants were reviewed and approved by the Research Ethics Committee (REC), Ha'il University, Saudi Arabia, 12-12-2022, University president letter number H-2022-418.

Informed consent

Informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

Additional information

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