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Research Article

The Relationship Between Attitudes Toward Remote Learning and Work and Attitudes Toward Learning and Work in the Classroom and Office

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The development of computers and the Internet has transformed our lives beyond recognition. Learning, working, shopping, and navigating while driving have all evolved significantly compared to just a few years ago.

This study explored the relationship between attitudes toward physical activity in the real world and attitudes toward activity in the digital environment. We examined the relationship between attitudes toward learning, working, navigating, and receiving services in online (digital) environments and those in physical environments. The study utilized self-report questionnaires to assess the attitudes of participants.

A negative relationship was identified between attitudes toward traditional classroom learning and attitudes toward learning in a digital environment. This finding indicates that the two types of classrooms are perceived as distinct environments rather than as a single unified space.

A negative relationship was identified between attitudes toward office work and those toward remote work. This finding indicates that the two work environments are perceived as distinct rather than as a single environment.

A negative relationship was also identified between attitudes toward navigation without computers and attitudes toward navigation using computers. This finding indicates that the two navigation environments are perceived as distinct rather than a single environment.

In contrast, a positive relationship was identified between attitudes toward services provided through digital means and those provided by human agents. This finding suggests that the service experience delivered through digital channels is similar to that provided by human agents.

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Introduction

The advancements in computer technology and the rise of the Internet have profoundly transformed our lives. Digital payment methods have become increasingly popular for instance and you can pay using digital money[1][2]. Learning, working, shopping, and navigating while driving have all evolved significantly compared to just a few years ago. You can conveniently study, work, and shop from the comfort of your home, making it easier to balance your daily activities. When we leave the house and travel by car, we often rely on technology, such as navigation systems, to assist us. When shopping, consumers frequently utilize various technologies, to enhance their purchasing experience[3].

Following the development of computers and the Internet, some interesting questions about human behavior emerge. For example, Job satisfaction and attitudes toward work, as well as perceptions of the shopping experience, may be influenced by the development of computers and the emergence of the Internet. The influence of computers and the Internet on our lives is evident across various domains.

Self-service

Several years ago, the possibility that computers would increasingly influence service was mentioned[4]. Recent studies have explored various questions related to computer use for different purposes. For example, researchers conducted a comprehensive study on customer experience. Additionally, the study by Åkesson, Edvardsson, and Tronvoll[5] examined the significance of various variables in the design of self-service technologies (SST). Research has reported that customers have various needs and expectations from a self-service system, including the provision of information, a sense of control, support from both systems and employees, user-friendly technologies, and reliability. It has also been observed that customers often prefer to receive information during their visit to the store. Finally, customers prefer fast checkout options over waiting, as it saves them time.

The introduction of mobile phones has led to numerous opportunities and changes in various aspects of life.[6]. For instance, mobile phones serve as effective tools for language learning[7]. This location-based marketing technology helps businesses increase sales by alerting nearby consumers about the availability of their products and services via mobile notifications[8]. For example, a department store

chain that allows customers to access real-time information about sales promotions and the locations of its stores. However, when designing such systems, it is recommended to pay attention to creating accessible and easy-to-understand user interfaces to facilitate their use[9]. In addition, customers' concerns about the potential leakage of personal information should be considered[9].

Consumers can search for and purchase both old and new pop or classical music through online music services. Numerous studies have explored the factors that influence this particular type of consumer behavior. Research into the factors influencing consumer intentions to purchase online content services is an important and relevant topic. For example, understanding why consumers are willing to pay for online and digital content services is essential. Accordingly the research, aimed to better understand the factors influencing consumers' willingness to purchase online content[10].

Social media

The evolution of technology and social media has drastically transformed communication between individuals in recent years. Social media refers to any online platform that enables users to create, share, and engage with a diverse range of content. This social media platform gained widespread popularity after 2003. For instance, McCreery, Vallett, and Clark[11] reported a significant case of social interaction on social media. The use of social media though significantly affects individuals, firms, and society[12]. However, it is important to note that the findings indicate most social media users are passive observers rather than active content contributors[12].

It has been found, for example, that social media use can change social norms and behaviors. It has also been found that companies are increasingly using information from social media during candidate selection[13]. In today's digital age, political involvement may also be significantly influenced by the use of social media platforms.

On the other hand, government policy can significantly influence internet usage. Government policies can also significantly influence the adoption and use of social media[12]. Finally, it is important to recognize the many risks associated with social media use. This is especially crucial for teenagers, who may be more vulnerable to these dangers[14]. Social networks (online communities) are also discussed in another article[15]. Additionally, in their 2010 study, Golbeck, Grimes, and Rogers examined politicians' use of social media[16].

Many social networking sites (SNS) allow users to create business pages. These services are managed by the host companies. However, there is a pressing need for active management of company social networks (CSNs). The challenge involves managing a new communication channel that allows consumers to communicate directly with companies[17]. This challenge lies in the fact that this is an uncontrolled communications environment. Additionally, it is important to remember that a company's social networks possess both technical and social characteristics. Another important article in this field was published in 2018[18].

Online brand communities, similarly, are located in an online (virtual) environment where members share information about a brand[19]. Participation in online brand communities occurs in ways not possible in their offline counterparts. Several hundred articles have been published on this[20]. Especially since 2010, many articles have been published discussing brand communities. The studies have explored the characteristics of brand communities. For example, it has been examined why consumers participate in and contribute to brand communities and what variables are affected by this participation[21]. More about brand communities has been discussed elsewhere[22].

As we explored earlier, the widespread adoption of social media platforms has profoundly impacted businesses across various industries. As one example Coupland and Brown[23] present an example of organization–public communication through a dialogue between employees and the public on the organization's web forum. The data presented included messages posted on the forum, along with their responses, both of which were reviewed. Email exchanges published on the organization's website and within its online forum were presented. Additionally, the study examined the organization's willingness to respond to criticism in the forum.

Special needs

People with special needs may benefit greatly from the use of technology[24.]. For example, assistive technologies enable individuals with disabilities to perform various daily tasks independently. People with visual impairments, for instance, need such technological solutions. These innovative solutions enable individuals to function more independently in their daily activities. A study by Rosner and Perlman[25], For example, examined the effectiveness of various technological aids on the daily functioning and quality of life of individuals with blindness or visual impairments. According to the study findings, assistive devices have a significant impact on enhancing the quality of life for users.

Elderly people may also benefit from using technology[26]. For example, a study by Leist[27] indicates that older adults actively engage with social media platforms. The ability of older adults to utilize technology has been extensively analyzed in the literature[28]. Another article reported on the capacity of older adults to effectively use technology[29].

Learning

Online learning has gained popularity in recent years[30] and is likely to become the primary mode of education in the future. An example of this phenomenon has been reported in China[31]; similar findings have been documented elsewhere[32]. Additional studies have also been reported[33].

Several years ago, studies began to investigate online learning[34]. In recent years, studies have examined various systems related to online learning[30]. Many researchers, for example, have examined the Technology Acceptance Model to understand user acceptance of new technologies. The focus of these studies is to expand the Technology Acceptance Model[35][36] to more effectively explain technology acceptance[30]. Such research could, for example, investigate whether learners' experience with online (distance) learning can increase people's motivation to learn.

Virtual Reality has also been utilized in various educational contexts[37]. For instance, construction workers have been trained to identify potential risks using virtual reality technology. The study compared training for risk identification in a conventional setting versus training for risk identification using virtual reality[38]. The results indicate immediate learning of hazard identification and prevention skills among construction workers and students, whether they were trained using virtual reality or traditional methods[39]. It was also observed that the learners maintained full attention throughout the hour and a half of training. In addition, training using virtual reality was found to be more effective than traditional classroom methods that rely on presentations and slides. This means that training in virtual reality was significantly more effective than conventional classroom instruction. Subsequent findings were documented in a later article by Jensen and Konradsen[40]. A literature review has also been published later[41].

Virtual Reality as a Metaphor

Virtual reality also serves as a metaphor for understanding aspects of reality. This conceptualization aligns with similar approaches discussed in the literature (See some related ideas in the appendix.).

The extensive use of the digital environment in recent years, along with increased exposure to it, allows users to understand this metaphor better than before. However, one must, of course, be careful not to use this metaphor in a simplistic way.

Health

The new uses of computers and the Internet may also have significant health implications. For example, the use of cell phones and other digital devices has health effects from radiation exposure[42]. Working from home may impact employees' health[43]. During the COVID-19 crisis, accurate and inaccurate information was rapidly exchanged between countries. This illustrates how advancements in computers and the Internet can influence health crises.

The digital environment

The digital environment is often perceived as distinct from the physical environment[44]. Another study demonstrated that the digital environment is perceived as distinct from traditional environments[3]. The question arises whether the two types of environments are experienced differently. This question was thoroughly investigated in the study detailed below, which aims to uncover new insights.

If the digital environment is perceived as distinct from the physical environment, there will be no correlation between different indicators—such as attitudes toward the environment—when measured in the physical context compared to when they are measured in the digital context. A relationship will be observed if both environments are experienced in the same way.

Based on the above, a relationship may exist between attitudes toward the physical environment and those toward the digital environment; however, it is also possible that no such relationship will be found. This study examined the relationship between attitudes toward the physical environment and those toward the digital environment. Self-report questionnaires were used to examine participants' attitudes. It was examined whether attitudes towards learning, working, navigating, and receiving services in the online environment are related to those in the physical environment.

Method

Participants

Four diverse groups of volunteers took part in the study. In the first group, there were 43 participants who contributed to the research. The age of the participants ranged from 18 to 44 years (mean = 27.65 years, SD = 6.25 years). This group consisted of twenty-one women. This group responded to questions that explored attitudes toward both digital and human services. Services were delivered to this group by a non-profit organization. Participants were requested to evaluate the accuracy of the sentence. Questions were asked, including: "The digital system provides quality service," "The digital system is fast," and "I feel there is a good level of security in the digital system." Regarding non-digital services, questions included statements such as: "I feel that the organization provides a good human response," "I feel that the organization has many answers to my needs," and "I feel that the organization understands the difficulties I face."

In the second group of the study, 54 drivers took part. The age of the participants ranged from 22 to over 55 years. Specifically, 3 participants were aged 20-25, 20 were aged 26-30, 13 were aged 31-40, 9 were aged 41-55, and 6 were older than 55. Nine men participated in the study. Five drivers had a license for less than five years, eleven had a license for five to ten years, and thirty-eight had a license for more than ten years. This group was asked about their attitudes toward navigation with and without navigation software. Sample questions: "I am satisfied when driving with a navigation app", "When driving with the navigation app, I feel safe on the road", "I am more relaxed when driving with a navigation app", " I feel satisfied when driving without a navigation app", "When driving without a navigation app, I feel safe", " When driving without a navigation app, I am more attentive to my surroundings".

In the third group, 63 participants took part, including 32 women. The ages of the participants ranged from 18 to 52 years, with a mean of 27.35 years and a standard deviation of 8.53. This group was asked about their attitudes toward working remotely and in the office. Sample questions: "Remote work is effective", " Remote work streamlines learning", " I manage my time effectively when working remotely", "Office meetings are quick and effective", " I find working in the office comfortable", " I am satisfied that I can work from the office".

The fourth group consisted of 26 participants, 18 of whom were women. The ages of the participants ranged from 19 to 48 years, with a mean of 34 years and a standard deviation of 8.53. This group was asked about their attitudes toward learning both from home (remote, online, digital) and in the classroom. Sample questions: "Distance learning is effective", "I am satisfied with distance learning", "In distance learning, the lessons are organized", "Classroom learning is effective", "Classroom learning helps me understand the material", "I enjoy studying in class".

Instruments

The study utilized the following research tool: questionnaires. A demographic questionnaire included questions about age, gender, main fields of work and study, whether the participant has a driver's license, and the duration of ownership of that license. The second questionnaire is designed to evaluate participants' attitudes. In this questionnaire, participants were presented with a variety of attitudes towards the physical and digital environments and asked to indicate their views on a 5-point Likert scale. The questions were based on previously existing questionnaires[44].

Procedure

The volunteers included both undergraduate and graduate students from universities and colleges in Israel, as well as non-students who participated in filling out the questionnaire. The research team sent the electronic questionnaire to participants by email.

Results

The relationships among the participants' attitudes were examined, specifically focusing on the average attitudes toward the digital service in the organization (Digital Service), the digital environment (Digitization), and general service in the organization (General Service).

The reliability of the index measuring attitudes toward the digital service in the organization, as indicated by Cronbach's Alpha, was 0.863. The reliability of the index measuring attitudes toward the digital environment (Digitization), as indicated by Cronbach's Alpha, was 0.821. The reliability of the index assessing attitudes toward the service in general was measured at 0.739. Table 1 illustrates the relationships among the variables.

Variables	1	2	3	4
1. General service				
2. Digital service	.435**			
3. Digitization	.066	.276		
4. Age	.247	−.054	−.067	

Table 1. It illustrates the relationships between various variables

**. *Correlation is significant at the 0.01 level (2-tailed).*

*. *Correlation is significant at the 0.05 level (2-tailed).*

A regression analysis was conducted to examine the relationships among the indicators. The regression model is significant, explaining 28.2% of the variance (adjusted R^2 = 0.282), with $F_{(4, 36)}$ = 4.936 and $p < 0.05$. Table 2 presents the values obtained from the regression analysis. The findings in Table 2 show that there is a relationship between attitudes toward digital service in the organization (Digital service) and attitudes toward general service in the organization (General service), attitudes toward the digital environment (Digitization), age, and gender.

Variables	B	Std. Error	Beta	T	Sig.
General service	.444	.142	.435	3.139	.003
Digitization	.309	.145	.291	2.131	.040
Age	−.031	.017	−.276	−1.875	.069
Sex	−.507	.198	−.372	−2.562	.015

Table 2. The relationship between attitudes toward digital service (Digital service) in the organization (dependent variable) and attitudes toward general service in the organization (General service), toward digitization (the digital environment), age, and gender.

A difference was observed in attitudes toward the organization's digital service between men and women. The average score for men was 4.26, while the average for women was 3.91 (p =.054, t(39) = 1.64)

Group 2: The study examined the relationship between reported attitudes on navigation quality when using digital navigation software versus traditional non-digital methods. Reliability (Cronbach's Alpha) of the measure examining attitudes toward digital navigation was 0.889. The reliability (Cronbach's Alpha) of the survey index measuring attitudes toward non-digital navigation was 0.993. Table 3 illustrates the relationships among the various variables.

Variables	1	2	3	4
1. Digital Navigation				
2. Non Digital Navigation	-.584**			
3. Years of Driving	-.162	.088		
4. Age	.040	-.192	.483**	

Table 3. Relationships between variables

**. *Correlation is significant at the 0.01 level (2-tailed).*

*. *Correlation is significant at the 0.05 level (2-tailed).*

A regression analysis was performed to examine the relationships between the indicators. The regression model is significant and explains 30.1% of the variance (adjusted R-squared = 0.301), $F_{(4, 53)}$ = 6.714, p <.05. Table 4 presents the values from the regression analysis. Table 4 reveals a negative relationship between attitudes toward digital navigation and attitudes toward navigation without software (non-digital navigation).

Variables	B	Std. Error	Beta	T	Sig.
Non Digital Navigation	-.426	.089	-.579	-4.776	<.001
Years of Driving	-.094	.125	-.101	-.749	.457
Age	-.012	.074	-.022	-.159	.875
Sex	.003	.192	.002	.016	.987

Table 4. Relationships between attitudes toward digital navigation (dependent variable) and the following independent variables: Attitudes toward non-digital navigation, Number of years of driving, Age, Sex

Group 3: Additionally, the study examined the relationship between attitudes towards working from home (digital work) and attitudes towards working in the office (non-digital work). Reliability (Cronbach's Alpha) of the measure examining attitudes toward remote work (digital work) was 0.920. Reliability (Cronbach's Alpha) of the measure examining attitudes toward office work (non-digital work) was 0.878. Table 5 shows the relationships between the various variables.

Variables	1	2	3	4
1. Digital Work				
2. Non Digital Work	-.293*			
3. Number of children	-.071	-.101		
4. Age	.009	-.025	.779**	

Table 5. Relationships between the variables

**. *Correlation is significant at the 0.01 level (2-tailed).*

*. *Correlation is significant at the 0.05 level (2-tailed).*

A multiple regression analysis was performed to examine the relationships between the indicators identified in the study. The Regression model is not significant and explains 5.2% of the variance (adjusted R square=.052), $F_{(4, 61)} =1.835$, $p>.05$ ($p=.135$). Table 6 presents the results of the regression analysis. The findings in Table 6 reveal a negative relationship between attitudes toward remote work (digital work) and attitudes toward office work.

Variables	B	Std. Error	Beta	T	Sig.
Work from the Office	−.437	.177	−.313	−2.465	.017
Number of Children	−.273	.190	−.292	−1.442	.155
Age	.024	.020	.239	1.176	.245
Sex	−.133	.214	−.079	−.622	.537

Table 6. The relationship between attitudes toward remote work (dependent variable) and attitudes toward office work, number of children, age, and gender

Group 4: In addition, the relationship between attitudes toward studying from home (distance learning) and attitudes toward studying in the classroom was examined. Reliability (Cronbach's Alpha) of the measure examining attitudes toward distance learning was 0.966. Reliability (Cronbach's Alpha) of the measure examining attitudes toward classroom learning was 0.955. Table 7 illustrates the relationships among the various variables.

Variables	1	2	3
1. Digital learning			
2. Non Digital learning	−.285		
4. Age	.069	.070	

Table 7. relationships among the various variables.

A regression analysis was conducted to investigate the relationships among the indicators. The regression model is not statistically significant, explaining only 12.3% of the variance (adjusted R^2 = 0.123). The F-statistic is $F_{(3, 25)}$ = 2.171, with a p-value of 0.120 ($p > 0.05$). Table 8 presents the values of the Regression analysis. The findings presented in Table 8 indicate a negative, albeit non-significant, relationship between attitudes toward distance learning and attitudes toward classroom learning (non-digital learning).

Variables	B	Std. Error	Beta	T	Sig.
Non Digital learning	-.384	.231	-.313	-1.663	.111
Age	.008	.035	.045	.237	.815
Sex	.973	.488	.377	1.993	.059

Table 8. The relationship between attitudes toward distance learning (dependent variable) and attitudes toward classroom learning (non-digital learning), age, and sex

A significant difference was found in attitudes towards distance learning between men and women. The average score for men was 4.23, while the average score for women was 3.29 ($p < .05$, $t(24)$ = -1.90).

Discussion

We typically study in a traditional classroom. We can, however, also engage in learning and teaching within a digital classroom, which allows for remote education using computing technology[45]. Additionally, various types of learning can be combined[46]. Of course there are differences between the two forms of learning, and necessary adjustments may need to be made[47]. The transition to distance learning occurred rapidly during the COVID-19 crisis[48]. This transition to online learning

posed significant challenges for many students[49]. The transition to online teaching proved to be quite difficult for lecturers[50]. The transition to online learning has posed many additional challenges for learners and teachers[51]. In a research article, Ali[52] also explores the rapid transition to distance learning.

In the research presented here, a negative relationship was identified between attitudes towards learning in traditional classrooms and attitudes towards learning in digital classrooms. This finding indicates that the two types of classrooms are perceived not as a single environment, but as two distinct environments. Another study by Perlman[53] found similar results. Similar findings were reported in Pakistan by Adnan & Anwar[54]. Additional findings indicate varying relationships between academic performance in remote learning environments and other factors[55]. Research by Johanisa et al.[56] indicates that parents play an active role in their children's learning process. Other studies have addressed leadership during distance learning[57]. Additional studies have explored the relationship between self-efficacy and distance learning[58].

While many employees continue to work in traditional office settings, an increasing number are opting for remote work arrangements[59]. However, there are differences between the two forms of work, and necessary adjustments may need to be made[60]. In this study, a negative relationship was identified between attitudes towards office work and those towards remote work. This finding suggests that the two work environments are perceived as distinct rather than as a single environment. Similar findings were also reported in another article[60]. Elsewhere, a relationship between remote work and job satisfaction has been reported[61]. In a separate study, Foo and Adam[62] reported that working from home does not always confer advantages.

While drivers presently operate cars, autonomous driving without human involvement is expected to become the standard mode of transportation in the future[63]. Of course, in this situation, the traveler would not need to navigate his way. Until just a few years ago, drivers relied on paper maps for navigation. Today, however, they can use computers for more efficient and accurate navigation. There are noteworthy differences between traditional navigation and digital navigation. In this study, a negative relationship was found between attitudes toward navigation without computerization and attitudes toward navigation with computerization. This finding indicates that the two navigation environments are perceived as distinct rather than as a single environment. The differences between paper maps and digital maps have been reported elsewhere[64]. Additionally, a laboratory experiment

tested the ability to navigate a new route after learning an old one, where parts of both routes were identical[65]. Although there is an overlap between the two routes, navigation speed does not improve when navigating the new one. This indicates that, in this situation, the speed of navigation in the new route is the same as it would be if the subjects had never navigated this route before.

Governments and private organizations are adopting digital service platforms to centralize service delivery[66]. Services can now be delivered through digital means; however, in the past, most services were provided by human agents. Municipal services have been and are being provided to citizens through non-digital means[67].

In recent years, the Internet has significantly transformed how people engage in buying and selling, [68]. Private organizations deliver many services to varied clients through the Internet[5]. Tourism services are provided differently today than in the past[69]. Another notable example of this phenomenon is the use of the Internet for gambling, as reported by Mickelsson (2013). Government services are also provided using digital means[70].

The service experience in digital interactions has been extensively analyzed in the literature[71]. In this study, a positive relationship was identified between attitudes toward services provided through digital means and those offered by human agents. This finding suggests that the service experience delivered through digital channels is similar to that provided by human agents.

The use of the Internet and social networks can lead to significant issues and challenges[72]. The findings presented here are significant because, as mentioned, in recent years, government organizations, non-governmental organizations, and private entities have increasingly provided services through digital means via the Internet. Such services tailored to various populations across multiple fields are widely available[66].

In summary, many models were employed to examine the relationship between individuals' willingness to use technology and various influencing factors[73]. Personality variables have also been found to be related to Internet use[74]. Various variables are also associated with social media use[75]. This research contributes to our understanding of the factors influencing individuals' willingness to adopt technology.

The negative relationship identified in this study between attitudes toward the physical environment and those toward the digital environment suggests that individuals perceive and experience the digital environment as distinct and separate from the physical one. The study by Griffith, Krampf, and

Palmer[3] found that users perceive the digital environment as distinct from traditional environments. These findings may have significant implications for the transition to digital learning and remote work. It is not possible to transition to a new learning and work environment as if it were the same as the previous one; necessary adjustments must be made. These adjustments may include, for instance, specialized training programs for teachers.

Appendix

Virtual Reality as a Metaphor (VRaaM) for reality

Virtual reality also serves as a metaphor for understanding aspects of reality[44]. This conceptualization aligns with similar approaches discussed in the literature[76]. Similar to virtual reality, in the real world, it is possible to predict the probability of experiencing a certain value of a parameter—such as the position of a particle—yet this parameter does not have a definitive value until it is measured or observed. This means that the parameter values are not final before measurement, which results in a certain saving (in terms of computer language) prior to measurement. The time it takes to recognize an object during measurement may be influenced not only by the speed of neuronal processing but also by the speed of image stabilization, similar to what is experienced in virtual reality.

Similar to virtual reality, both space and time are illusions. Two particles, for example, are perceived as being in separate locations because their spatial parameters differ. Thus, the values of the parameters of two (or more) entangled particles are determined immediately when one of them is measured, even if they are distant from each other in terms of spatial position. In the context of computer language, which may be conceptualized as existing within the envelope of the universe, it is defined that when one parameter of a particle is measured, both parameters of the two particles are assigned definitive values. Thus, it is possible to transfer knowledge between objects instantaneously through telepathy (Similar to telepathy). As stated, time is an illusion, and our experience of it arises from changes in the time parameter.

According to what is written above, (1) an experience of neuronal activity is merely a representation of that activity. (2) Memory may be preserved in some form even when neurons cease to exist. (3) The amount of memories stored is not limited by the size of the brain. (4) An experience does not arise from physical neuronal activity.

Finally, similar to pixels in computer terminology, when measuring space and time, these quantities have a minimal value and behave as discrete units rather than as a continuum. In other words, a unit smaller than the minimum value cannot be measured or experienced.

Statements and Declarations

Data availability

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

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Conflicts of interests

The authors have no competing interests to declare that are relevant to the content of this article.

Ethics approval

There is an approval from a research ethics committee of Hadassah Academic College.

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Declarations