The Relationships Between the Perception of Physical and Economic Risks Measured Within the Road Environment and Within the Digital Environment and the Relationships Between Risk Perceptions Measured in Separate Environments

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Abstract

Risk perception may be measured in different, separate environments. For example, drivers and pedestrians assess the risks in the road environment and workers assess the risks in the workplace environment.

The purpose of this study is to examine the relationships between the risks perceived in several different environments in order to examine whether separate environments – such as the workplace environment and the road environment – are perceived as distinct environments, and whether the knowledge gained by learning to assess risks in one environment can be transferred to a new one.

This study found a relationship between measures of risk perception while driving and a while crossing a road. Another finding is that a relationship was observed between the perception of risks related to vaccines and those related to medication, and a relationship was also observed between measures of risk perception while browsing the Internet and while using social media.

The relationships between the measures of risk perception while crossing a road and the measures of risk perception while hiking in nature or in the workplace are small, as are the relationships between health-related risks and stock market-related risks.

These findings suggest that separate environments, such as the workplace environment and the natural environment, are perceived as distinct environments from the road environment, and that knowledge learned in one environment cannot be transferred and used when in the other environment.

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Introduction

When risk perception is measured, drivers and workers assess the level of risk in a variety of situations. They assess, for example, the level of risk when crossing an intersection at a red light, or the level of risk when there is a puddle of oil on the workshop floor. A study by Perlman et al. (2014) found that when drivers and workers assessed risks, some study participants assessed the probability of an accident occurring, but most assessed the severity of an accident should one occur – with some participants assessing both the likelihood and the severity of a potential accident (Perlman et al. 2014). Moreover, it was found that learning in a virtual reality environment affected the measured risk perception and led to higher risk judgments. This effect was found to apply only to the judgment of an accident's probability, but not to that of its severity (Leder et al., 2019). A relationship was also found between risk perception and risky behaviors (Brewer et al., 2004) – thus, an increased perception of threat vulnerability and threat severity increases protective behavior (Floyd et al., 2000). Another study found that people who reported a high perceived likelihood of falling ill were more likely to get vaccinated and people who reported high perceived severity of illness were also more likely to get vaccinated (Brewer et al., 2007).

Further studies have linked the age of drivers to perceived risks (Dionne et al., 2007) and when younger drivers participated in a program that included an emergency room visit in order to see the results of accidents for themselves, they rated the risks while driving to be higher following the program. In particular, the risk of driving at high speed was perceived to be higher (Lanning et al., 2018). Additional studies have found a relationship between the magnitude of perceived risk and the risk of a driver being involved in an accident (Wetton et al., 2010). Another study, conducted at a steel plant in India, found that when workers assessed different risks, a relationship was found between the measured risk perception and the number of accidents at work, and that workers who work in different parts of the plant perceive risks differently (Basha & Maiti, 2013).

Risk perception may be measured in different, separate environments (or domains). For example, drivers and pedestrians assess the risks in the road environment and workers assess the risks in the workplace environment. The purpose of this study is to examine the relationships between the risks perceived in several different environments in order to examine whether knowledge gained by learning to assess risks in one environment can be transferred to a new environment. Some environments that may be taken into consideration are, for example, environments where the risks are physical (such as while driving on the road, or while working in construction) or environments where economic activity is carried out and the risk, for example, is one of losing money (such as when buying stocks on the stock exchange). Another relatively new environment where one is exposed to various risks is the Internet and the digital environment – in this environment one may be exposed, for example, to various economic risks, harassment or cyberbullying.

As an example of activities that can be performed in a digital environment, governments and private organizations make use of this environment in order to provide better service to diverse populations (Askim et al., 2011) – with one example being online gambling (Mickelsson, 2013). Self-service technology (SST) is another example of how various activities can be performed using a computer in a digital environment – such as shopping via self-service systems (Åkesson et al., 2014). In a similar fashion, various uses are made of virtual environments and computers – for example, one can learn various things using computerized and simulated environments (Sacks et al., 2013). Other examples include using social networks (Bolton et al., 2013) and the Internet in general, which may also have moral consequences such as when using software, listening to music and watching movies without paying for it (Wang et al., 2013). Such use of computers and the Internet may also greatly benefit people with disabilities (Rosner & Perlman, 2018). The Internet is also a source of a great deal of data and knowledge published by its users, but governments may restrict the distribution of this data and this knowledge, and conceal knowledge that it holds, despite insights emerging from the unraveling theory (Milgrom, 1981; Grossman & Hart. 1980; Grossman, 1981). It may even be argued that data distributed on the Internet may affect the response of the masses during an outbreak of a pandemic.

The use of the digital environment as a metaphor to explain reality demonstrates the importance of this environment (see for example Fields et al., 2018).The exposure of users to the digital environment also allows them to understand this metaphor (see appendix).

Following up on this, it may be thought that a relationship would be found between measures of safety behavior (Ratzon et al., 2021) and risk perception as measured in different environments. This is because when one learns a certain action (such as identifying and evaluating risks) in one environment, it may be possible that after the initial training and acquisition of knowledge in one environment (or domain), the activity and knowledge could be transferable to a new, separate environment (Barnett & Ceci, 2002). On the other hand, evidence exists from experimental research suggesting that in certain situations, an activity learned in a particular environment cannot be performed as quickly and easily in a new environment (Perlman et al., 2010). Thus, as suggested by Hoffman et al. (2016), An activity performed in a particular context is locked into that context and cannot be performed at the same speed in a new context (Hoffman et al., 2017; Perlman et al., 2016). From this, it may be expected that no relationship will be found between measures of risk perceptions that were measured in different environments. This is because knowledge cannot be used in a new environment if we have learned it in another environment, meaning that the knowledge is non-transferrable to the new environment. For example, if risk identification and assessment are studied in one environment, it may be difficult to identify and assess risks in a new environment.

According to the above, a relationship may be found between the risk perceptions measured in one environment, such as the road environment, and the risk perceptions measured in another environment, such as the work environment. However, it is possible such a relationship may not be found. We also expect to find a relationship between risk perceptions measured in one environment and risk perceptions measured in the same environment. In the road environment, for example, there may be a relationship between the risk perception measured while driving and the risk perception measured while crossing a road, if road users think of the road and perceive it as one environment, and not as several separate environments.

The relationships between the measures of risk perception were examined in different environments. A self-reporting questionnaire was used to examine the study participants' measures of risk perception. It is possible to predict that relationships shall be found between the measures of risk perception in environments that can considered parts of one environment – environments where one may speculate that participants think of and treat as one environment, and therefore perceive as one environment. Thus, a relationship is expected to be found between the measures of risk perception while driving and while crossing a road (the risk perception of pedestrians). In addition, relationships are expected to be found between measures of risk perception while using a computer and browsing the internet and measures of risk perception when using social media. Experiment 1 and Experiment 2 examined the relationship between measures of risk perception while driving and while crossing the road. Additionally, the relationship between measures of risk perception while crossing a road, measures of risk perception at work and measures of risk perception while hiking in nature was examined. Experiment 3 examined the relationship between measures of risk perception while browsing the internet and measures of risk perception while using social media. Experiment 4 examined the relationship between measures of risk perception related to health and measures of risk perception related to the economy.

Method

Participants

Four groups of volunteers took part in the study. The first group included 24 participants. Participant ages ranged from 26 to 62 (mean = 32.33, standard deviation (sd) = 7.38). Eight of these participants were men. Only one participant did not have a driver's license. Participants held a driver's license for 0 to 30 years (mean = 13.62, sd = 5.66). The second group included 21 participants. Participant ages ranged from 19 to 54 (mean = 29.71, sd = 12.25). Five of these participants were men. Only one participant did not have a driver's license. Participants held a driver's license for 0 to 36 years (mean = 11.26, sd = 10.10). The third group included 85 participants, 30 of which were women. Participant ages ranged from 18 to 66 (mean = 34, sd = 11.9). The fourth group included 26 participants. Participant ages ranged from 25 to 67 (mean = 34, sd = 10.4).

Instruments

The study was based on the following research instruments, including questionnaires. A demographic questionnaire included questions about age, gender, major areas of employment, major areas of study, whether a participant has a driver's license and the number of years a participant has had a driver's license. In addition, the third group was also asked what their level of religiosity was, ranging from 1 (secular) to 5 (ultra-orthodox). The second questionnaire was the Risk Perception Questionnaire. In this questionnaire, a variety of situations from different fields were presented and the participant was asked to indicate each situation's degree of risk on a 7-point Likert scale (see Appendix). The questions were based on previously-existing questionnaires. The risk perception questionnaire for drivers is based on the Driving

Behavior Questionnaire (DBQ) (Reason et al., 1990). The questionnaire on risk perception while crossing a road is based on the Pedestrian Behavior Scale (PBS) (Granié et al., 2013). Additional questions were written based on a risk perception questionnaire for construction workers (Perlman et al., 2014). In the third group, participants were also asked about their level of internet content filtering, ranging from 1 (no filtering) to 5 ("hermetic" filtering) and their level of Internet usage ranging from “not using at all” (1) to “using regularly” (5).

Procedure

Participants were undergraduate and graduate students at universities and colleges in Israel, as well as non-students, who volunteered to fill out the questionnaire. The e-questionnaire was sent to participants via e-mail.

Results

First, the relationships between the average measures in the first group were examined – that is to say, the relationships between the average measures of risk perception while driving, while crossing a road and while hiking in nature. Cronbach’s Alpha for the measure of risk perception while driving was 0.937, Cronbach’s Alpha for the measure of risk perception while crossing a road was 0.950, and Cronbach’s Alpha for the measure of risk perception while hiking in nature was 0.916. Table 1 presents the relationships between the various variables.

Table 1. *The Relationships Between the Variables*

Variables	1	2	3	4	5
1. Risk perception while crossing a road					
2. Risk perception while driving	.818**				
3. Risk perception while hiking	.427*	.697**			
4. Years with a driver’s license	.225	.116	.273		
5. Age	-.032	.060	.254	.651**	

**. *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 measures. The regression model is significant and explains 71.8% of the variance (adjusted R-squared=.718) $F(5, 23) = 12.683$, $p<.001$. Table 2 presents the values of the regression analysis.

The findings show a relationship between the measure of risk perception while crossing a road, the measure of risk perception while driving, and the number of years of driving. No relationship was found between the measure of risk perception while crossing a road and the measure of risk perception while hiking in nature. According to these findings, a relationship exists between the risk perceptions while driving and while crossing a road, while the relationship between the perception of risks while crossing a road and the perception of risks while hiking in nature is small and not significant. This relationship between risk perceptions while driving and while crossing a road may indicate that knowledge learned in one environment can be used when in a new environment. It is also possible that the road environment is perceived as one environment and not as two distinct environments.

Table 2. *The Relationship Between the Average Risk Perception when Crossing a Road (Dependent Variable), the Average Risk Perception while Driving (Score in the Risk Perception while Driving Questionnaire), the Average Risk Perception while Hiking (Score in the Risk Perception While Hiking Questionnaire), the Number of Years with a Driver's License, Age and Sex (N=24).*

Variables	B	Std. Error	Beta	T	Sig.
Risk perception while driving	1.049	.163	1.007	6.423	.000
Risk perception while hiking	-.374	.195	-.312	-1.915	.071
Years with a driver's license	.059	.028	.333	2.136	.047
Age	-.032	.020	-.236	-1.593	.129
Sex	-.083	.249	-.040	-.335	.742

Next, the relationships between the average measures in the second group were examined – that is to say, the relationships between the average measures of risk perception while driving, while crossing a road, and at work. Cronbach's Alpha for the measure of risk perception while driving was 0.904, Cronbach's Alpha for the measure of risk perception while crossing a road was 0.941, and Cronbach's Alpha for the measure of risk perception at work was 0.953. Table 3 presents the relationships between the variables.

Table 3. *The Relationships Between the Variables*

Variables	1	2	3	4	5
1. Risk perception when crossing a road					
2. Risk perception while driving	.805**				
3. Risk perception at work	.726**	.800**			
4. Years with a driver's license	.156	.106	.232		
5. Age	182.	121.	246.	**933.	

**. 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 measures. The regression model is significant and explains 59.2% of the variance (adjusted R-squared=.592) F (5, 18) =6.231, p<.01. Table 4 presents the values of the regression analysis.

The findings show a relationship between the measures of risk perception while crossing a road and while driving. No relationship was found between the measure of risk perception while crossing a road and the measure of risk perception at work. According to these findings, a relationship exists between risk perceptions while driving and while crossing a road, while the relationship between the perception of risks while crossing a road and the perception of risks at work is small and not significant. This relationship between risk perceptions while driving and while crossing a road may indicate that knowledge learned in one environment can be used when in another environment. It is also possible that the road environment is perceived as one environment and not as two distinct environments.

Table 4. *The Relationship Between the Average Risk Perception When Crossing a Road (Dependent variable), the Average Risk Perception while Driving (Score in the Risk Perception while Driving Questionnaire), the Average Risk Perception at Work (Score in the Risk Perception at Work Questionnaire), the Number of Years with a Driver's License, Age and Sex (N=21).*

Variables	B	Std. Error	Beta	T	Sig.
Risk perception as a driver	.685	.304	.572	2.252	.042
Risk perception at work	.285	.265	.278	1.077	.301
Years with a driver's license	.028	.052	.230	.534	.602
Age	-.019	.046	-.179	-.409	.689
Sex	.463	.471	.158	.983	.343

Next, the relationships between the average measures in the third group were examined – that is to say, the relationships between the average measures of risk perception when browsing the internet and when using social media. Cronbach's Alpha for the measure of risk perception while browsing the Internet was 0.925 and Cronbach's Alpha for the measure of risk perception while using social media was 0.972. Table 5 presents the relationships between the variables.

Table 5. *The Relationships Between the Variables*

Variables	1	2	3	4	5	6	7	8
1. Browsing the Internet (RP)								
2. Using social media (RP)	.751**							
3. Internet usage level	-.569**	-.323**						
4. Personal computer (filtering)	515**	.319**	-.299*					
5. Smartphone (filtering)	.440**	.231*	-.386**	.668**				
6. Workplace (filtering)	.317**	.343**	-.163	.502**	.347**			
7. Level of religiosity	.821**	.649**	-.506**	.692**	.454**	.547**		
8. Age	-.001	.026	-.245*	.025	.146	-.093	-.049	

**. *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 measures. The regression model is significant and explains 74.7% of the variance (adjusted R-squared=.747) F (8, 57)=22.025, p<.001. Table 6 presents the values of the regression analysis.

The findings show a relationship between the measures of risk perception while browsing the Internet and while using social media. This relationship between risk perceptions while browsing the Internet while using social media may indicate that knowledge learned in one environment can be used in another. It is also possible that the digital environment is perceived as one environment, not as two distinct environments. However, the lack of relationship between the filtering level of smartphones and risk perception in browsing the Internet may indicate that these two environments are perceived as separate environments, i.e., the mobile phone environment and the Internet environment. Another finding is that secular people perceive the risk levels as lower. This finding makes sense, as religious people may use the Internet less for religious reasons.

Table 6. *The Relationship Between the Average Risk Perception (RP) while Browsing the Internet (Dependent Variable), the Average Risk Perception while Using Social Media (Score in the Risk Perception while Using Social Media Questionnaire), Content Filtering Level for the Internet at the Workplace, when Using a Smartphone, and when Using a Personal Computer, Internet Usage Level (1 = No Use at All), Level of Religiosity (1 = Secular), Age and Sex (N=85).*

Variables	B	Std. Error	Beta	T	Sig.
Using social media (RP)	.321	.071	.424	4.521	.000
Internet usage level	-.352	.230	-.126	-1.528	.133
Personal computer (filtering)	-.181	.217	-.097	-.834	.408
Smartphone (filtering)	.221	.148	.139	1.499	.140
Workplace (filtering)	-.115	.088	-.113	-1.306	.198
Level of religiosity	.652	.144	.570	4.524	.000
Age	-.007	.010	-.054	-.673	.504
Sex	.224	.210	.080	1.067	.291

Finally, the relationships between the average measures in the fourth group were examined – that is to say, the relationships between the average measures of risk perception related to vaccines and medication and those of risk perception related to buying stocks were examined. Cronbach's Alpha for the measure of risk perception associated with vaccines was 0.960, Cronbach's Alpha for the measure of risk perception associated with medication was 0.939, and Cronbach's Alpha for the measure of risk perception associated with buying stocks was 0.934. Table 7 presents the relationships between the variables.

Table 7. *The relationships between the variables*

Variables	1	2	3	4
1. Vaccine risks				
2. Medication risks	.833**			
3. Risks in buying stocks	.527**	.683**		
4. Age	304.-	331.-	009.	

**. 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 measures. The regression model is significant and explains 63.9% of the variance (adjusted R-squared=.639) $F(4,23) = 11.165$, $p < .001$. Table 8 presents the values of the regression analysis.

The findings show a relationship between the measure of risk perception associated with vaccines and the measure of risk perception associated with medication. No relationship was found between the measure of risk perception associated with buying stocks and the measure of risk perception associated with vaccines. According to these findings, a relationship exists between the perception of risks associated with vaccines and the perception of risks associated with medication, while the relationship between the perception of risks associated with vaccines and the perception of risks associated with buying stocks is small and not significant. The relationship between the perceptions of risks associated with vaccines and those associated with medication may indicate that health risks are perceived as one single risk environment. The environment in which one is exposed to economic risks is perceived as a distinct environment.

Table 8. *The Relationship Between the Average Risk Perception Associated with Vaccines (Dependent Variable), the Average Risk Perception Associated with Medication (Score in the Risk Perception of Medication Questionnaire), the Average Risk Perception Associated with Buying Stocks (Score in the Risk Perception of Buying Stocks Questionnaire), Age and Sex (N=21).*

Variables	B	Std. Error	Beta	T	Sig.
Drug risks	.980	.223	.858	4.400	.000
Risks in buying stocks	-.069	.206	-.062	-.337	.740
Age	-.005	.017	-.038	-.262	.796
Sex	.198	.361	.072	.550	.589

Discussion

This study found a relationship between the measure of risk perception while driving and the measure of risk perception while crossing a road. This relationship was found even though these two tasks are seemingly different tasks, ostensibly performed in two different and distinct environments. This relationship between the measures of risk perception while driving on the road and while crossing a road may indicate that knowledge learned in one environment can be used when in another environment. It is also possible that the road environment is not perceived by the road user as a distinct environment when driving a vehicle and when crossing a road – that is to say, it is possible that the road user perceives the road environment as one whole environment and not as two separate environments.

The relationships between the measures of risk perception when crossing a road and the measures of risk perception while hiking in nature or at work are minor. These findings suggest that the work and the nature environments are perceived as separate environments from the road environment. These minor relationships between the measures of risk perception at work and when hiking in nature and the measures of risk perception while crossing a road may also indicate that knowledge learned in one environment cannot be transferred and used when in the other environment. In conclusion, these environments are perceived as separate environments, and it is difficult to transfer knowledge between such environments.

Another finding is that a relationship was observed between risk perceptions associated with vaccines and those associated with medication. This finding suggests that these risks are experienced as risks that are part of the same environment. The lack of relationship between health-related risks and risks related to the economy and buying stocks indicates that these two environments are experienced as separate risk environments.

This study also found a relationship between measures of risk perception while browsing the Internet and measures of risk perception while using social media. Here, too, this relationship was found even though these two tasks are seemingly different tasks, ostensibly performed in two different and separate environments. This relationship between the measure of risk perception when browsing the Internet and the measure of risk perception when using social media may indicate that knowledge learned in one environment can be transferred and used when in another environment. It is also possible that the computer environment is not perceived by the user as a one environment when browsing the Internet and as another environment when using social media. Thus, the computer environment may be perceived by the user as a single environment, and not as two separate environments. However, the small relationship between the filtering level of smartphones and the measure of risk perception while browsing the Internet may imply that these are two environments that are perceived as separate, i.e., the smartphone environment and the Internet environment. Additionally, it should be noted that recently, in a yet-unpublished study, a negative relationship was found between students' attitudes toward learning in physical classrooms and students' attitudes toward learning in the digital classroom. This finding suggests that the digital classroom and the physical classroom are experienced as two separate environments. However, it is possible that a negative relationship indicates that interference is created when moving within the learning environment in the transition from the physical classroom environment to the digital classroom environment. (Hoffman, et al., 2017)

The relationship found in this study between risk perceptions while browsing the Internet and risk perceptions while using social media implies, as said, that the computer environment is perceived as one environment by the user, and that it may also be experienced and perceived as separate and distinct from the physical environment. Measures of risky activity, for example, or of moral behavior (Wang et al., 2013) and those of social activity may differ in both environments. As stated above and as an additional contemporary example, studying most typically occurs in physical classrooms, but it is also possible to study in a computerized classroom, and to learn and teach remotely using a computer – however, differences exist between the two forms of learning, and necessary adjustments may need to be made. Similarly, there may be additional differences in the transition between the physical environment and the computerized environment. Thus, for example, differences were found in different measures following transitioning from reading from paper to reading a text in a computerized environment (Ackerman & Goldsmith, 2011; Eshet-Alkalai & Geri, 2007). However, another study found similarities between browsing the computerized environment and wayfinding in the physical environment (Kim & Hirtle, 1995).

In conclusion, in transition between different environments – such as the road environment and the work environment – there may be differences between the measures of risk perception, as the study shows above. In this context, a sequence of actions is performed as a single and separate unit, and not as separate units of knowledge – in the sense that the memories of the parts or increments from this unit cannot be used in a different and new context when learning a new series of actions (Perlman et al., 2010). According to this approach, knowledge from one environment is not stored in increments or “chunks” but as a single unit - and therefore such stored parts or increments cannot be used when transitioning to a new environment. An interesting metaphor that illustrates this is the transfer of knowledge from a sender to a receiver on the Internet. On the Internet, knowledge is transmitted in separate packets and by separate routes, and not as one unit in one route. This allows for flexibility that probably does not exist when a person transitions between environments.

According to earlier studies, a broad theory explaining risk perception should take into account that when assessing risks, both the likelihood of an accident and the extent of the injury from the accident should one occur are assessed. This is very important because it is commonly thought that both the likelihood and the severity of an accident should be assessed when assessing risks, and it is important to teach this to employees and drivers. The locus of control (Ajzen, 2002; Kallmen, 2000) may also have an impact on risk perception, and the level of control in a dangerous situation may be assessed. A low level of perceived control may be associated with a high risk perception. In addition, it is possible that when assessing risks, the average of risks or the sum of risks is calculated in a similar way to the way a first impression is assessed (Anderson, 1965). For example, when trying to assess the overall risk while working on a construction site or when purchasing a stock portfolio, one may calculate the average of all risks – but when calculating the sum of the risks, the addition of several small risks which lower the average may increase the overall perceived risk of the construction site or of the stock portfolio. If the average is calculated, these small risks will reduce the perceived risk of the construction site or of the stock portfolio, as the average decreased. In this situation, the risk assessment is irrational. As another example, when assessing the risk of a serious illness, one tends to remember all the people they know that have contracted this illness. First, the likelihood of contracting the illness is estimated based on the number of people one remembers whom have contracted this illness, and then the severity of the illness each of these individuals have experienced is assessed. The severity of the illness is estimated by calculating the average of severity, or the sum of severity.

Another possible model suggests a decision on the degree of risk is made based of a comparison to the most comparable memory. For example, when crossing a road at a red light on Kalanit Street at seven p.m. on a winter day, the level of risk is assessed in accordance with another very similar situation that one remembers, and a decision is made based on this memory. Risk perceptions according to the various models involve memory processes (Wood et al., 2016) which may not be conscious (Perlman & Tzelgov, 2006; Logan, 1988). According to another possible model, risk perception does not involve memory processes. For example, risks are assessed by the estimated speed at which an object moves in the direction of the assessor and by the estimated size of the object. According to this model, when assessing risks, no other risky situations are remembered and the memory of previous risks is irrelevant.

Finally, when drivers and pedestrians are taught to identify and assess risks in the road environment, they perceive these risks as existing in the same environment, and the interactions between different road users in this environment are significant. For example, when teaching a road user, such as a pedestrian or motorcyclist, to understand the driver's perspective, it may improve the driving safety and risk perception of the motorcyclist or pedestrian (Shahar et al., 2011). For these reasons, it is possible to use and present examples of risks to which drivers are exposed and risks to which pedestrians are exposed when they are taught to identify and assess risks.

Appendix

Questionnaire regarding risk perception while driving: In your opinion, what is the level of risk for/of the situations below? (Rate from 1-7)

Driving in reverse at high speed
Driving when blood alcohol levels are above the levels permitted by law
Honking at another driver
Not checking the mirrors before leaving a parking space or changing lanes
Braking too fast / too hard on a slippery road
Leaving a junction in a way that a forces a driver with the right of way to stop to allow one to pass
Ignoring the speed limit on an urban road / in a built-up area
Getting confused while operating switches in the car (e.g., flipping the light switch instead of the wiper switch)
Ignoring a yield sign and not yielding the right of way
Starting to drive in third gear while leaving a traffic light
Trying to overtake a vehicle without noticing that it signaling a right turn
Getting mad at another driver and chasing them to scold them
Overtaking a slow vehicle
“Sticking” to the vehicle in front in a way that will make it difficult to stop safely when making an emergency stop
Running a yellow light
Immersing oneself in thoughts while driving to an extent of not paying attention to a section of the road
Ignoring the speed limit on a highway

Questionnaire regarding risk perception while crossing a road: in your opinion, what is the level of risk for/of the situations below? (Rate from 1-7)

Starting to cross at the crosswalk and finishing by walking diagonally to save time
Crossing a road between vehicles standing in a traffic jam
Crossing a road between parked vehicles
Watching the traffic light (for oncoming vehicles) and starting to cross as soon as it turns red
Crossing the road even when the light is still red on the traffic light for pedestrians
Crossing a road diagonally to save time
Crossing away from a crosswalk even if there is one less than 50 meters away
On a two-way street, crossing the first section of the street and waiting in the middle of the road to cross the second section
Crossing a road while talking on a cell phone or listening to music using earbuds
Crossing a road even when the light is still green on the traffic light for oncoming vehicles
Starting to crossing a road, but running the rest of the way to avoid passing vehicles
Crossing a road without looking, i.e., following other people currently crossing a road.
Walk through passages where pedestrians are not allowed to save time
Crossing a road very slowly to annoy a driver
Forgetting to look before crossing due to thinking of something else
Crossing without looking due to talking to someone
Forgetting to look before crossing due to wanting to join someone who is on the sidewalk on the other side
Running and crossing the street without looking, due to being in a hurry

Questionnaire regarding risk perception while hiking: in your opinion, what is the level of risk for/of the situations below? (Rate from 1-7)

Walking with open shoes while hiking
Going hiking without a hat during the daylight hours
Going hiking with a hat during the hot hours
Lifting a stone from the ground
Kicking a stone before lifting it off the ground
Sleeping under a eucalyptus tree
Drinking water from an unknown water source
Taking a photo on the edge of a cliff
Eating an unfamiliar fruit
Wearing shorts while hiking
Lighting a fire out in the field
Lighting a fire near a field of thorns
Carrying a heavy weight on one's back while hiking on a hot day
Hiking in the dark without high-visibility markers
Approaching an unfamiliar animal while hiking
Going into water with a life jacket during a hike
Jumping off a cliff to a body of water below during a hike
Not applying mosquito repellent at night
Sleeping in a designated campground
Lighting a fire and going to sleep with the fire still going
Splitting off from a group and hiking alone, without a phone

Questionnaire regarding risk perception at work: in your opinion, what is the level of risk for/of the situations below? (Rate from 1-7)

An object, such as tools or blocks, falling from a scaffold
Working under a scaffold without a protective helmet
Working under a scaffold with a protective helmet
Working with sharp tools without protective gloves
Working on a balcony or on a scaffold at a great height with no guardrail
Working on a balcony or a scaffold at a low height with no guardrail
Working on a balcony or on a scaffold at a great height with a rickety guardrail
Working on a balcony or on a scaffold at a low height with a rickety guardrail
Working near an unprotected shaft or hole
Working near a shaft or hole with improvised protection
Working on an improvised platform, e.g., boards over two ladders
Working when there is a rope or an electric cable on the floor blocking the way
Working when there is a board or block on the floor blocking the way
Working near exposed wires on an electrical panel
Working with tools when there are exposed wires in a power tool's cable
While climbing / working on a ladder placed against a wall
Carrying a heavy weight
Working when there is heavy mechanical engineering equipment on site
Working without proper protective shoes when a board on the floor has a nail through it
Working with proper protective shoes when a board on the floor has a nail through it
Working with chemicals

Questionnaire regarding risk perception while browsing the internet: in your opinion, what is the level of risk for/of the situations below? (Rate from 1-7)

Getting addicted to browsing the internet
Online financial scams (phishing)
Exposure to general news sites
Exposure to ultra-orthodox news sites (Kikar Hashabat, Behadrei Haredim, etc.)
Open internet, without filtering
Filtered internet with basic filtering (filtering pornographic content and violence)
Medium-filtered internet (filtering content with exposure to minimal clothing)
Highly filtered internet (filtering and minimizing video content and television broadcasts)
"Hermetically" filtered internet (allowing access to approved sites only, such as: bank, email, etc).

Questionnaire regarding risk perception while using social networks: in your opinion, what is the level of risk for/of the situations below? (Rate from 1-7)

Addiction to using social networks
Exposure and falling victim to cyberbullying
Harm to minors
Exposure and falling victim to shaming
Exploitation of minors and solicitation for indecent acts
Exposure and participation to the arena of online humiliation
Disclosure of personal details
Negative behavioral impact

In your opinion, what is the level of risk for/of the situations below (for example, risks of side effects)

Receiving a hepatitis B vaccine
Human papillomavirus vaccine
Tetanus vaccine
Mumps vaccine
Measles vaccine
Rubella vaccine
Pentavalent vaccine
Vaccines administered in two doses
The effect of vaccines on the chance of autism
Side effects of vaccines administered to infants
Vaccine harms fertility
COVID-19 vaccine is harmful to the heart
Vaccines administered to children cause hair loss
Vaccines impair liver function
Vaccines are harmful in the long term
Vaccines are harmful in the short term
Vaccines are harmful for adults
Vaccines are harmful for children
Vaccines are harmful for babies
Swelling and redness in the area of vaccination
Vaccination by injection
Vaccination by swallowing
Diphtheria vaccine
Typhoid vaccine
Fever after vaccination

In your opinion, what is the level of risk for/of the situations below (taking medication)?

Taking paracetamol during a headache
Steroids
Ciprofloxacin
Death due to taking a prescription drug
Oral antibiotics
Intravenous antibiotics
Painkillers
Injections for diabetes
Prescription drugs
Over-the-counter drugs
Psychoactive drugs
High blood pressure after taking a prescription drug
Pupil dilation as a after taking a prescription drug
Impaired heart function after taking a prescription drug
Impairment of sexual function after taking a prescription drug
Depression after taking a prescription drug
Weight gain after taking a prescription drug
Disability after taking a prescription drug

Here are some stocks and their rise and fall patterns according to the Tel Aviv 35 Index. (The stocks will not be referred to by their original names, so as not to make contexts).

For example: When the pattern of changes to the stock in recent months is a 13% rise in the first month, a 13% fall in the second, a 17% in the third, a 12% fall in the fourth, a 10% rise in the fifth and a 21% fall in the last, this constitutes a pattern of sharp falls and rises. However, when the pattern of changes to the stock in recent months is a 1% rise in the first month, a 3% rise in the second, a 1% rise in the third, a 4% rise in the fourth, a 1% rise in the fifth and a 3% percent rise in the last, this is a stable and moderate pattern of rises.

What is the risk level for a sharp fall in the coming month for the following stocks? (1 – No risk of fall or possible rise, 7 – High risk of fall)

Pattern of changes in half a year (more or less):

A pattern of moderate falls over 5 months
A pattern of sharp rises over 10 months
An unstable pattern of sharp falls and rises over 15 months
A pattern of moderate falls and rises over 15 months
A pattern of moderate falls over 17 months
A pattern of sharp falls over 15 months
A pattern of very sharp falls over 5 months
A pattern of very sharp rises over 5 months
A pattern of moderate falls over 5 months followed by moderate rises over 5 months
A pattern of moderate rises over 5 months followed by moderate falls over 5 months
A pattern of sharp falls over 5 months followed by moderate rises over 5 months
A pattern of sharp declines over 7 months followed by sharp rises over 7 months
A pattern of no change over 25 months
A pattern of no change over 5 months
No change over 5 months followed by a pattern of sharp falls over 5 months
No change over 10 months followed by a pattern of sharp rises over 10 months
A pattern of no change over 12 months

The digital environment as a metaphor for reality

An experience arises from the activity of neurons, that is, from unconscious elements a conscious experience is created. In the drawing below, 1 is the activity of neurons and 2 is the experience of space and time. When describing reality, we use the concepts of space, time and physical objects. We expect to find relationship between neuronal activity and conscious experience.

But the experience is perhaps created when parameters of space and time are processed by data structures (or Virtual Machines). That is, terms such as data, software, and space and time experienced by data structures (or virtual machines) and parameters of location of object and time must be used. Thus, an object moves in space and time changes when parameters of space and time change. The viewer's experience is of the movement of an object and of time passing. That is, the data is processed by data structures for the experience of space and time. Data structures within the database, process the data stream and the parameters.

Thus, 1 is a data structure (experienced as neurons) and 2 is experience of space and time. The answer to the question of whether space and time are the basis can have implications for the question, whether and how the activity of neurons causes an experience? That is, there is no need to explain how the activity of neurons (in space and time) causes the experience of space and time. The question must be asked in a different way: how is an experience created? It is possible that there is no relationship between neuronal activity and experience.

The metaphor may have implications (And if we take into account the probabilistic behavior of particles). For example, the probabilistic behavior of a stimulus may affect response times to the stimulus. Thus, an object that is presented may exist with probability and will be experienced with probability by the viewer. This may have implications for the results of laboratory experiments and the design of computational models. Before planning an experiment with the aim of understanding cognitive phenomena, this possibility must be taken into account. As a thought experiment, a particle that is presented in the same place as a particle that was presented earlier will appear in a slightly different place (with some probability). This may affect the reaction time and recognition of the particle (Inhibition Of Return). As another example, information (between synchronized particles) may be transferred instantaneously. It is possible that this may explain telepathy or the feeling of a person being watched, when he does not see the viewer.

In addition, it is possible that a (conscious) experience will not be related to neuronal activity, and there will be no relationship between measured neuronal activity and a rating (1-5 on a Likert scale) of an experience (Rating of the road situation as dangerous, rating of the beauty of a picture, rating of the length of a line).

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