

# Examining Social Media and Technology Attitudes in Older-Aged and Middle-Aged Adults: Relationship With Cognitive Flexibility and Sense of Inadequacy

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The main purpose of this study is to reveal the relationship between the perceived cognitive flexibility and sense of inadequacy of older adults and middle adults with their attitudes towards social media use and technology. Of the participants, 210 (68.2%) were female and 98 (31.8%) were male. The sample consisted of 49.4% of middle adults aged between 50-59 years, and a total of 308 adults, 50.6% of whom were older adults aged 60 and over. "Personal Information Form", "Sense of Inadequacy Scale", "Cognitive Flexibility Scale", and "Media and Technology Use and Attitudes Scale" were used to collect data in the research. According to the findings of the study, older- and middle-aged adults differed in their sense of inadequacy and cognitive flexibility capacity. A significant difference was found between social media use and technology attitudes of older and middle adults. The findings were discussed within the framework of the relevant literature.

*Keywords:* feelings of inadequacy, cognitive flexibility, social media, technology attitudes, older-aged adult, middle-aged adult

Aging is a process that has physical and cognitive dimensions that affect the daily life of the individual. With the effect of aging, advanced adults may have difficulty in performing many functions that they could easily do before. These difficulties can affect individuals' reluctance to learn new information and skills. Reluctance can lead to inability in older adults to practice new learning and adapt it to daily life. It becomes difficult to adapt to the innovations that occur with aging, to some changes that make human life easier, to constantly update ourselves. Older adults may be uninterested and inept in using new technologies for such reasons. There may be many factors that affect these attitudes of advanced adults towards technology. Reasons such as not being able to act quickly as in their youth, physiological changes due to aging, and not being able to protect their cognitive flexibility may have caused them to put their experience with technology into a negative frame. In addition, advanced adults may also be victims of certain stereotypes and prejudices created by other segments of society and adopted by them. They may be subjected to derogatory and humiliating judgments such as "You can't do it, let me do it", "What will you learn and do", "What are you doing with a smart phone

after this age”, “You can’t use it”. These judgments may cause older adults to perceive the changes that occur in them as a deficiency and not to develop flexibility, while at the same time they may cause them to develop a sense of inadequacy.

The changing and developing world is changing many things in human life very quickly. One of the important steps of this change is the widespread use of technology. Technology is developing at a great speed and now it takes place in a large part of our subjective lives compared to the past. These developments have enabled the 21st century to be referred to as the information age. In this century, the content of information, the way of accessing information, the speed of accessing information, and the channels of accessing information have diversified. Individuals try to adapt to the opportunities offered by technology in order to reach information. Technology provides countless opportunities and possibilities. Technological developments have been one of the main factors in the occurrence of various changes in the subjective life of the individual, especially in social life. For example, while individuals enjoy the convenience and pleasure of shopping online, they also meet their needs such as friendship, sharing, and communication by using information and communication technologies. By using technology effectively, individuals can make friends and maintain their social lives in the online environment.

Adapting to the possibilities offered by technology and their developments in a short time is a process that requires effort. Following innovations and integrating these innovations into daily life requires a cognitive skill. Every day, many technological innovations enter our lives. It can be challenging to follow and adopt these innovations that have entered our lives in this short time. Due to some changes brought by age, advanced adults may have difficulty in adapting and practicing innovations in the face of innovations. With aging, a number of physiological and cognitive changes occur in advanced adults. These physiological changes bring along a number of general physical problems. The weakening of cognitive capacity that occurs with general physical problems can cause advanced adults to be unable to use many new technological products (Ekici & Gümüş, 2016).

Older aged adults get help to understand and use most technological innovations. In this context, in a study published in 2009, the rate of individuals who can use mobile phones without assistance is 92.1%, and the rate of individuals who can use computers without assistance is 89.3% (Bierhoffvd, 2013). The behavior of asking for help and the attitudes and behaviors of the person helping in return can affect individuals’ attitudes towards technology use. Older-aged adults trying to adapt to the innovations of technology may have difficulty in adapting and may feel inadequate.

According to Adlerian Theory, sense organs have some meaningful functions in social life. In this context, the capacity of emotional organs to perform their functions should be evaluated within the social context. As a matter of fact, since the defects in the organs restrict the degree of sharing the experiences of others, they also cause the development of the feeling of inadequacy. With aging, the capacity of the individual’s sensory organs and cognitive abilities weaken for various reasons (Wang et al., 2016). With this weakening, slowness and failures can be seen in the processes such as adapting to innovations, integrating them into daily life, and learning in older aged adults. This situation may reveal the feeling of inadequacy in older aged adults (Akdogan & Ceyhan, 2014).

In Erikson’s Psychosocial Development Theory, the feeling of inadequacy was also emphasized in the periods of Productivity vs. Stagnation and a Feeling of Integrity vs. Hopelessness. K  knel (1988, p. 32) states that individuals’ feelings of inadequacy have psychological and physiological effects on them. This

psychological effect is the negative effect of the feeling of inadequacy on the cognitive activities of individuals. The feeling of inadequacy is an element that affects the new learning of individuals. This element sometimes has a positive and sometimes negative effect on new learning.

Cognitive flexibility capacities of older-aged adults can play a protective role in the process of adapting to technological innovations (Öztürk, 2013). Cognitive flexibility is defined as an individual's awareness of alternative ways and options and being effective in adapting to new situations (Martin & Anderson, 1998; Martin, Anderson, & Thweatt, 1998; Martin & Rubin, 1995). Individuals with cognitive flexibility feel more competent (Martin & Rubin, 1995). Cognitive flexibility can have a protective role in learning about technology use and innovations. This relationship has not been examined by empirical studies and remains a gap in the literature.

When the relevant literature is examined, the factors affecting the use of social media and attitudes towards technology have not been discussed in the context of the sense of inadequacy and cognitive flexibility. It is known that the feeling of inadequacy affects the use of existing cognitive and physical capacity. It is thought that the sense of inadequacy felt with aging may affect new learning that makes the use of technology more effective. Since it is thought that cognitive flexibility may have a protective effect on this condition, it was included in this study as one of the independent variables.

This study tries to reveal the effects of elderly individuals' sense of inadequacy and cognitive flexibility capacities on media and technology attitudes by comparing the age categories of aging determined by social gerontologists (Park et al., 2019; Lee et al., 2018; Abitağaoğlu et al., 2019; Şekerci & Biçer, 2019). Within the scope of this research, age groups were considered as two groups as middle adulthood and older-aged adulthood. According to the distinction that divides the adulthood period into seven categories defined by Bee and Bjorklund and Pellegrini (2000), the age range of 40-60 is classified as middle adulthood, while the age range of 60-80 is in the older-aged adulthood group. It is observed that individuals in the middle adult group have physical disabilities/decrease in some areas (strength, flexibility, length, cardiovascular functions). The physical decline of individuals in the older-aged adult group is noticeable; but this decrease is relatively slow, the reaction time slowing down. This distinction may affect the perceived inadequacy of these two age groups and their cognitive flexibility capacity. In this context, adults in this study were included in the study in two groups.

## **Method**

### **Participants**

The sample of the study consisted of 308 people reached by the convenience sampling technique. Of the participants participating in the study, 210 (68.2%) were female and 98 (31.8%) were male. Data were collected from Mersin and Tarsus Nursing Homes. The mean age of the sample is 58.311. The data of the participants were collected in two groups in terms of the representation of the advanced and middle adult age groups. 49.4% of the participants in the study are middle adults aged 50-59, while 50.6% are advanced adults aged 60 and over. While 42.9% of the participants stated that they lived alone, 57.1% stated that they did not live alone. While 30.5% of the participants are working in an active job, 69.1% are not working in an active job.

### **Material**

Personal Information Form, Feeling of Inadequacy Scale, Cognitive Flexibility Scale, Feeling of Inadequacy Scale, and Media and Technology Use and Attitudes Scale were applied to the participants in the study.

**Personal Information Form.** This is the form in which information about age, gender, educational status, socio-economic level, working life, and lifestyle of the participants is obtained.

**Sense of Inadequacy Scale (FSS).** It is a five-point Likert-type scale consisting of 20 items and three sub-dimensions, based on the Adlerian approach, developed to measure the feeling of inadequacy of university students (Akdoğan, 2012). Although scores can be obtained separately from the three sub-dimensions, a score between 20 and 100 is obtained from the whole scale. The high score indicates the severity of the individual's sense of inadequacy. Discouragement, denial of self-worth, and useless superiority are the three sub-dimensions of the scale. In reliability studies, the Cronbach alpha internal consistency coefficient was determined as 0.86, and the test-retest reliability as 0.88 (Akdoğan, 2012). -0.74 with the Coopersmith Self-Esteem Inventory. It was determined that there was a correlation at the level of -0.66 with the Social Comparison Scale.

**Cognitive Flexibility Inventory (CFI).** The Cognitive Flexibility Inventory, which was prepared to measure the ability of individuals to produce compatible, balanced, alternative, and appropriate thoughts in difficult situations, was developed by Dennis and Vander Wal (2010). The 20-item scale includes Alternatives and Control subscales. With the Alternatives sub-scale, it is desired to measure the ability to perceive that there are alternatives to possible situations and human behaviors and to produce solutions in a way that can overcome difficult situations. The Control subscale measures the tendency to perceive difficult situations as controllable. The higher the score obtained from the scale, which has a five-point Likert-type structure ranging from "Not at All Appropriate" (1) to "Completely Appropriate" (5), it means that cognitive flexibility is also high. In the validity and reliability study of the original form of the scale, the Cronbach's alpha value of the Alternatives subscale was found to be 0.91 in the first and last measurement, while the Cronbach alpha values of the Control subscale were found to be 0.86 in the first measurement and 0.84 in the last measurement (Dennis & Vander Wal, 2010). In the adaptation, validity, and reliability study of the scale by Gülüm and Dağ (2012), the internal consistency coefficient of the whole scale was 0.90, and the internal consistency coefficients of the Alternatives and Control subscales were 0.89 and 0.85, respectively. When the validity of all scale and subscale items with Positive and Negative Emotion Scale, Beck Anxiety Scale, Beck Depression Scale, and Cognitive Flexibility Scale was examined, it was determined that the correlations ranged from -0.13 to -0.48 (Gülüm & Dağ, 2012).

**Media and Technology Use and Attitudes Scale.** Adapted in Özgür (2016), the Cronbach Alpha coefficients of the sub-factors of the Media and Technology Use and Attitudes Scale ranged from 0.89 to 0.71, and the two-half test correlations of the sub-factors of the scale were between 0.71 and 0.85. While some of the 31 items in the first eight factors of the adapted scale measure the frequency of use of old technologies (such as watching television), they also measure the frequency of use of new technologies (such as smart phone use, e-mail use, research on the Internet). It also includes sub-factors. While two factors (nine items) in the scale aim to determine the frequency of use of the Facebook social network, another sub-factor (four items) aims to determine the number of friends in the Facebook social network. In this context, the names of different social networks can be used instead of the Facebook social network in these three sub-factors. The last four factors of the scale (16 items) consist of items asking about attitude statements aiming to reveal the anxiety and addiction to technology, as well as revealing the positive or negative attitudes of the individual towards technology in general, without making a specific technology distinction. One of these four sub-factors aims to determine individuals' preferences for task switching while completing a task.

### Process

Participants participated face-to-face in an environment at the appropriate temperature and light for the application.

Personal Information Form, Feeling of Inadequacy Scale, Cognitive Flexibility Inventory, and Media and Technology Uses and Attitudes Scale were applied in the study. After the Personal Information Form was given to the participants, the other scales were applied in random order for each participant. Scales were filled in by the participants themselves.

### Results

In terms of feelings of inadequacy between older-aged adults ( $M= 1.8$ ,  $SD=0.61$ ) and middle-aged adults ( $M = 3.0$ ,  $SD = 1.05$ ), the independent sample t-test result showed a significant difference between groups with a large effect value ( $\eta^2 = 0.30$ ). Difference was found (Table 1). Older-aged adults averaged higher overall scores, on Feeling of Inadequacy Scale compared to middle adults. Advanced adults feel the sense of inadequacy more than middle adults ( $t(306) = 11.646$ ,  $p < 0.00$ ). Physiological and psychological changes increase with age. These changes can affect the satisfaction that adults get from their performances on various subjects. In this context, the sense of inadequacy that older adults feel due to physiological and psychological changes may be more than middle-aged adults. As a result of the independent sample t-test performed to examine the cognitive flexibility capacity between older-aged adults ( $M=4.24$ ,  $SD= 0.45$ ) and middle-aged adults ( $M= 4.36$ ,  $SD=0.38$ ), small effect value is between groups. A significant difference ( $\eta^2 = 0.01$ ) was found. Older-aged adults have a lower average overall score on the Cognitive Flexibility Inventory compared to middle-aged adults. Older adults rated themselves poorer in cognitive flexibility than middle-aged adults. Older-aged adults may rate themselves worse in terms of cognitive flexibility due to the decrease in their belief that the outcome of their behavior can be positive due to the changes that occur with age, and the weakening in their ability to produce quick solutions to problems.

Table 1

		$\bar{x}$	N	SS	t	p
Feeling of Inadequacy scores	Middle adults	1.88	152	0.617	11.646	0.000
	Older adults	3.02	156	1.05		
Cognitive Flexibility scores	Middle adults	4.36	152	0.38	2.46	0.014
	Older adults	4.24	156	0.45		

Active phone using ( $M=8.03$ ,  $SD= 2.05$ ;  $M= 3.88$ ,  $SD=3.28$ ) among middle-aged and older-aged adults ( $M= 8.73$ ,  $SD= 0.81$ ;  $M= 4.71$ ,  $SD=3.56$ ), internet research behavior ( $M= 9.35$ ,  $SD=1.07$ ;  $M=4.20$ ,  $SD=3.89$ ), e-mail use ( $M =3.97$ ,  $SD=1.87$ ;  $M=2.29$ ,  $SD=1.64$ ), media sharing behavior ( $M=6.92$ ,  $SD=3.81$ ;  $M=3.15$ ,  $SD=3.76$ ), amount of SMS usage ( $M= 7.75$ ,  $SD=1.09$ ;  $M=3.55$ ,  $SD=3.02$ ), video game playing behavior ( $M=1.31$ ,  $SD=0.62$ ;  $M =1.13$ ,  $SD=0.33$ ), amount of phone calls ( $M= 8.82$ ,  $SD= 1.13$ ;  $M=6.26$ ,  $SD=2.68$ ), amount of television watching ( $M= 5.24$ ,  $SD=0.57$ ;  $M= 2.62$ ,  $SD= 2.14$ ), online friendship ( $M= 1.60$ ,  $SD=0.48$ ;  $M=1.37$ ,  $SD=0.40$ ), social network friendship ( $M= 4.83$ ,  $SD= 0.94$ ;  $M= 3.03$ ,  $SD=2.05$ ), positive attitude towards technology ( $M= 4.58$ ,  $SD= 0.29$ ;  $M= 3.11$ ,  $SD= 1.13$ ), technology addiction ( $M= 3.08$ ,  $SD=0.64$ ;  $M=2.11$ ,  $SD= 0.94$ ), negative attitude towards technology ( $M= 3.22$ ,  $SD= 1.01$ ;  $M= 3.62$ ,  $SD= 1.09$ ) to see if there is a significant difference. Groups T-Test Analyzes were performed (Table 2).

Table 2

*Technology use by older adults and mid-adults*

	Age group	N	$\bar{x}$	SS	t	p
Using active phone	1.00	152	8.0307	2.05298	13.252	0.000
	2.00	156	3.8818	3.28514		0.000
Using social media	1.00	152	8.7376	0.81805	13.562	0.000
	2.00	156	4.7179	3.56357		0.000
Exploring Internet	1.00	152	9.3586	1.07102	15.737	0.000
	2.00	156	4.2067	3.89511		0.000
Using e-mail	1.00	152	3.9770	1.87577	8.386	0.000
	2.00	156	2.2933	1.64296		0.000
Sharing digital media	1.00	152	6.9227	3.81378	8.728	0.000
	2.00	156	3.1538	3.76448		0.000
Using SMS	1.00	152	7.7325	1.09386	16.002	0.000
	2.00	156	3.5577	3.02964		0.000
Playing video games	1.00	152	1.3114	0.62646	3.135	0.002
	2.00	156	1.1325	0.33586		0.002
Talking to some body on the phone	1.00	152	8.8289	1.13509	10.858	0.000
	2.00	156	6.2628	2.68955		0.000
Watching TV	1.00	152	5.2401	0.57822	14.538	0.000
	2.00	156	2.6282	2.14015		0.000
Online friendship	1.00	152	1.6020	0.48942	4.385	0.000
	2.00	156	1.3782	0.40310		0.000
Friendship on social media	1.00	152	4.8322	0.94893	9.832	0.000
	2.00	156	3.0321	2.05386		0.000
Positive attitudes towards technology	1.00	152	4.5899	0.29208	15.549	0.000
	2.00	156	3.1154	1.13302		0.000
Technophilia	1.00	152	3.0899	0.64189	10.597	0.000
	2.00	156	2.1154	0.94026		0.000
Negative attitudes towards technology	1.00	152	3.2237	1.01987	-3.325	0.001
	2.00	156	3.6239	1.09067		0.001

According to the results of the analysis, middle-aged adults use smart phones more than older-aged adults. As a result of the independent sample t-test, a significant difference with a large effect value (eta squared = 0.70) was found between the groups. Middle adults may outperform older aged adults in learning and using technological advances. With older age, individuals may be reluctant to learn and use new technological tools due to the decrease in learning speed and slowdown in processing speed. This may have caused older-aged adults to use less smart phones than middle adults. Internet search behavior was more common in middle-aged adults than in older-aged adults. As a result of the independent sample t-test, a significant difference with a large effect value (eta squared = 0.74) was found between the groups. The reason for this difference may be the willingness to learn innovations. Looking at previous findings, older adults feel more incompetent than middle adults. This sense of inadequacy may make them more reluctant to learn and research new developments.

It has been found in previous analyzes that middle adults have higher cognitive flexibility capacity than older-aged adults. Based on this result, middle adults may use social networks more actively and stay in touch

with their social environment more than older-aged adults. As a result of the independent sample t-test, a significant difference was found between the groups with a moderate effect value (eta squared = 0.68). Sending e-mails or SMS from computers or smart phones can be complex. In this context, older-aged adults may be communicating in different ways instead of sending e-mails or SMS. Thus, middle-aged adults may have scored higher on email use than older-aged adults. According to the results, middle-aged adults exhibit more social media use than older adults. As a result of the independent sample t-test, a significant difference with a large effect value (eta squared = 0.44) was found between the groups. In this context, social media sharing behavior was observed more. Older adults reported that they watched more television than middle-aged adults. As a result of the independent samples t-test, a significant difference with a large effect value (eta squared = 0.16) was found between the groups. Older adults may be more likely to display television viewing, a less strenuous activity that requires less movement due to physical effects, than middle-aged adults, who are a more active age group.

Correlation analysis was performed to examine the relationship between cognitive flexibility and feelings of inadequacy in older- and middle-aged adults. According to the results of the analysis, a significant negative correlation was found between cognitive flexibility and sense of inadequacy ( $r = -0.243$ ,  $p < 0.00$ ). It has been observed that if individuals have cognitively flexible capacity, they feel less sense of inadequacy. Correlation analysis was conducted to examine the relationship between the feelings of inadequacy and cognitive flexibility capacities experienced by older adults. According to the results of the analysis, a significant negative correlation was found between cognitive flexibility and sense of inadequacy ( $r = -0.265$ ,  $p < 0.001$ ).

Correlation analysis was conducted to examine the relationship between middle-aged adults' sense of inadequacy and their cognitive flexibility capacities. According to the results of the analysis, a significant negative correlation was found between cognitive flexibility and sense of inadequacy ( $r = -0.174$ ,  $p < 0.05$ ). When middle and older adults were analyzed together and separately, a negative correlation was found between cognitive flexibility and feelings of inadequacy. The feeling of inadequacy may trigger the perception of the cognitive flexibility capacity as being underestimated.

Independent Groups T-Test analysis was conducted to see whether positive attitudes towards technology differ between older ( $M = 3.62$ ,  $SD = 1.09$ ) and middle ( $M = 3.22$ ,  $SD = 1.01$ ) aged adults. As a result of the independent sample t-test, a significant difference with a large effect value (eta squared = 0.178) was found between the groups. Positive and negative attitudes towards technology are a sub-dimension of the Media and Technology Use Scale and are calculated by taking the average of the answers given to the questions in the sub-dimension. According to the results of the analysis, a significant difference was found between the two groups in terms of positive attitudes towards technology ( $t(306) = -3.32$ ,  $p < 0.05$ ).

Independent Groups T-Test analysis was conducted to see whether negative attitudes towards technology differ between older and middle-aged adults. According to the results of the analysis, a moderately significant difference was found between the two groups in terms of negative aspects of technology ( $t(306) = -3.32$ ,  $p > 0.05$ , eta squared = 0.03) (Table 3). Middle adults were found to have a more positive attitude towards technology than older adults. According to this finding, it may be easier for middle adults to follow, adapt, and use technological developments more effectively than older adults. In this context, their ability to use technology may have caused them to have a more positive attitude towards technology.

Table 3

*Attitudes towards technology of older adults and mid- adults*

		$\bar{x}$	SS	t	p
Negative attitudes towards technology	Middle adults	3.22	1.01	-3.32	0.001
	Older adults	1.01	1.05		
Positive attitudes towards technology	Middle adults	4.58	0.29	-15.54	0.001
	Older adults	3.11	1.10		

Correlation analysis was conducted to examine the relationship between participants' positive attitudes towards technology and their sense of inadequacy. According to the results of the analysis, as the positive attitudes of the participants towards the use of technology increased, the sense of inadequacy they felt decreased ( $r=-0.828$ ,  $p<0.05$ ).

### Discussion

The aim of this study is to examine the psychological factors that affect the attitudes of older and middle adults towards technology use.

As a result of the analyses made in this context, it was found that the sense of inadequacy felt by older adults and middle adults differed. When the average of the groups is examined, the amount of feelings of inadequacy stated by the advanced adults is higher than the middle adults. Along with the aging process, a number of physical and cognitive changes occur in the building body. Transaction speed, which is one of these changes, decreases with age (Salthouse, 2014). Decreased processing speed makes it difficult for the individual to learn new information and makes it difficult to apply the learned information. The decrease in the capacity of sensory modalities is another factor that slows down the learning rate of the individual (Salthouse, 2014). Learning to use and using developing technology products becomes more difficult as we age. It can be evaluated in this context that advanced adults who have difficulty in learning report more feelings of inadequacy. Since each unit of time spent in the aging process causes different changes in the body, it is not surprising that this difference can be observed in middle and older adults.

Technology has been integrated into our lives in many different ways. Today, we use technology when using smart phones, researching on the internet, using social networks, sharing media, messaging, playing video games, talking to somebody on the phone, watching television, and having online friendships. Our ability to accommodate these different uses in our lives changes with the changes brought about by aging in our frequency of use.

Hasher and Zacks (1988) argue that the age-related decline in working memory does not represent a reduction in capacity, but rather that working memory becomes cluttered with irrelevant information due to a reduced ability to control its content. That is, information can enter working memory but not be used effectively. As adults age, their ability to use the knowledge they have learned about technology is affected. In this context, older and middle adults may differ in the amount of use of technology in different ways.

Cognitive flexibility is evaluated as adapting to certain situations, the ability to switch from one thought to another, or the capacity to look at different problems with multifaceted strategies. It is defined as being aware of options, adapting to new situations, and feeling competent about these situations. The human brain is a large and complex structure. The prefrontal areas, one of the anatomical structures in our brain, are responsible for executive functions. One of the important functions of executive functions is related to the development of new



behaviors. According to the executive functions theory, the areas that show the fastest volume shrinkage with aging are the prefrontal cortex structures. Prefrontal cortex structures are the most vulnerable areas to aging. Physiological changes in the prefrontal cortex affect new learning and behavior development related to these learnings. This situation can make it difficult for advanced adults to develop new behaviors and adapt to new developments. In this context, physiological changes in the brain can affect the cognitive flexibility capacity of the individual. Advanced adults who do not feel the sense of competence and cannot develop the compensation mechanism for the physiological changes that occur in their bodies may feel the feeling of inadequacy more. According to the findings obtained as a result of the analysis, the reported feeling of inadequacy and cognitive flexibility capacity has an inverse relationship. In this case, the sense of inadequacy that individuals feel may prevent them from developing cognitive flexibility. In addition, individuals may think that their cognitive flexibility capacities have decreased due to reasons such as slower functioning in their daily lives than before, and an increase in the number of physical problems. This thought may be triggering the feeling of inadequacy of individuals' low perceived cognitive flexibility.

One of the elements of attitudes is behavior. Attitudes towards an object are closely related to the extent to which behaviors related to that object can be realized. Motor ability, which weakens with aging, makes it difficult to perform many behaviors. In this context, older adults cannot be successful in the use of technological tools, which are tried to learn with aging. This failure may cause them to develop negative attitudes towards technological tools and technology use. Older adults who experience the constraints of old age more may have more negative attitudes towards technology use than middle adults.

Positive attitude towards technology may be related to the competence of individuals to use technological tools. Using technology in all its forms may affect the attitude towards technology. In this respect, with the advantage of age, middle adults may have a more positive attitude towards technology than older aged adults. When the literature is examined, it is possible to see that the variables in the research affect each other. The fact that the aspects of these effects are not clear and the studies are relational makes it difficult to establish a cause-effect relationship. It will be a great contribution to the literature for future studies to establish cause-effect relationships by studying these variables with experimental methods.

## Conclusion

Within the scope of the studies, the cognitive and physical changes brought about by aging affect the attitudes of adults towards technology. In this context, it may be useful to develop various exercises on cognitive flexibility, which is one of the important factors affecting the attitudes of adults towards technology. Supportive studies can be conducted on technology use so that older-aged adults' attitudes towards technology do not lead to feelings of inadequacy.

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### Extended Abstract

The changing and developing world order has begun to extend the lifespan of societies. This situation has increased the number of elderly individuals in the society. In all societies, a portion of the population is described as “old”. The onset and evaluation of old age vary according to the welfare levels of societies. At this point, individual, social, and cultural factors gain importance. Aging is a process that continues from birth to death and has a universal character. In short, aging is relative, but the aging process is universal.

Although technological products are seen as indispensable elements in the continuation of daily life, they have important roles in the solution of social problems. The design of attractive and useful products for the elderly and the more effective use of technological options contribute to improving the quality of life of the elderly and facilitating their social adaptation. E.g., for elderly individuals, using the telephone is important in terms of establishing regular social relations with their relatives and friends. However, there are some obstacles for the elderly who use technology. Age-related disabilities: visual impairment, problems with dexterity and mobility, difficulty in understanding and grasping, limited perception. Features of technology: complexity, small text, technical terms, problems due to some technological innovations not working or being easy. Attitude: perception that technology is dangerous, expensive, complex, surprising, and difficult to learn. Education and support issues: financial barriers to education and lack of educational opportunities, such as lack of quality education opportunities to provide adequate support and educators throughout the learning process. Cost: inability to purchase, use or access technological products due to limited income.

The age of 70 is a turning point in terms of showing interest in technology. Consumers aged 70 and over have less interest, lower education and income levels than younger ones. However, there is an interest in multimedia and its applications in these periods. Studies have shown that older women have less interest and trust in technology compared to men, and have lower education levels and financial resources. On the other hand, it has been determined that older men have more support and opportunities in obtaining information about new technology.

Older people need to be informed about the advantages of new services. If the elderly learn the value of the product and accept its benefits, the price they will pay will decrease proportionally. The main reason for older people to meet technology is that it can be purchased, easily used and can provide significant benefits. In the study they conducted, Hazer and Kılınç listed the reason why the elderly never used a technological tool as mostly not knowing how to use it and being complex and difficult to use. They determined that they answered the reason for using a technological tool they purchased first and not using it later as usage and maintenance/cleaning difficulties. On the other hand, older individuals have a certain concern for new technology, but they know how to use items that meet their real needs, such as televisions and remote controls.

In this study, it was determined that the stage of aging affects the attitude towards technology and effective use. Cognitive and physical skills, which weaken with the aging process, serve individuals to feel the feeling of inadequacy. The feeling of inadequacy can lead to a poor evaluation of one's own capacity. It is difficult for individuals with weak cognitive flexibility capacity to cope with the feeling of inadequacy. This feeling can negatively affect the ability to follow, learn, and use my new technologies. Middle-aged adults are in a more advantageous position than older adults in terms of physical and cognitive skills. This advantage affects their ability to cope with the feeling of inadequacy and the use of technology, which is a key point in their daily lives.

Cognitive flexibility is related to how an individual perceives his or her life capacity, regardless of age. In this context, it has been seen that adults who maintain and develop their cognitive flexibility capacity are better in learning technological innovations, more willing and more positive in their attitudes towards technology.

It seems important for adults to have the cognitive flexibility to compensate for the physical and cognitive deteriorations brought by aging in order to maintain their existence effectively in all areas of life. In this context, the cognitive flexibility that is maintained and developed can prevent the sense of inadequacy felt or perceived.