



Attribution Retraining Effect on Language Learners' Adaptive Attributions and Ideal L2 Self

Nedensel Yükleme Eğitiminin Dil Öğrenenlerin Uyarlanabilir Yüklemelerine ve İdeal Dil Benliklerine Etkisi*

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ABSTRACT: This paper reports on the findings of a quasi-experimental study of English as a Foreign Language (EFL) learners at the tertiary level in Turkey. The study aims to disclose the extent to which EFL learners' adaptive attributions can be endorsed through Attribution Retraining (AR) abridged with strategy and vision training. A variety of data collection instruments, including attribution, causal dimension, and future self-guide scales as quantitative measures, pre-study and post- open-ended questions and semi-structured interviews as the qualitative data were employed. The findings showed that AR contributed to the development of adaptive attributions and a clearer self-image of the language learners. More specifically, the participants used more effective strategies, acquired regular study habits, and made more effort while downplaying overdependence on the teacher or task difficulty. The present research points out the necessity of integrating AR into the school curriculum to help language learners get more motivated and also take the adaptive attributions into action, such as employing effective language learning strategies.

Keywords: Attribution retraining, causal attributions, ideal L2 self, vision training, L2 learning motivation.

ÖZ: Bu çalışma Türkiye'de yükseköğretim seviyesinde İngilizce'yi yabancı dil olarak öğrenenler üzerinde yapılmıştır. Araştırmanın amacı hiçbir motivasyonel müdahale almayan kontrol grubu ile strateji ve vizyon eğitimi ile ilişkilendirilmiş Yükleme Eğitimi (YE) alan İngilizce öğrenenlerin uyumlanabilir başarı yüklemelerinin ne kadar değiştiğini ortaya çıkarmaktır. Çalışmada hem ön hem de son test olarak toplanan birçok veri aracı kullanılmıştır. Yükleme, Nedensel Boyut ve Gelecek Benlik Ölçekleri nicel, açık uçlu sorular ve yarı yapılandırılmış mülakatlar ise nitel verileri oluşturmuştur. Nicel veriler SPSS 21 ve nitel veriler Atlas.ti 7 versiyonu ile analiz edilmiştir. Bulgular göstermiştir ki verilen yükleme eğitimi dil öğrenenlerin uyarlanabilir yüklemeler ve daha net ideal ikinci dil benlikleri geliştirmesine katkıda bulunmuştur. Ayrıca, bu eğitim öğrenenlerin etkili dil öğrenme stratejileri kullanma, düzenli çalışma alışkanlıkları edinme ve dil öğrenirken daha çok emek sarfetme gibi kendi değiştirebilecekleri sebeplere inanışlarını artırırken katılımcıların öğretmen ve görev/dil zorluğu gibi kendi kontrolleri dışındaki sebeplere gereğinden fazla takılmadan uyumlu davranışlar edinmesini sağlamıştır. Bu çalışma yükleme eğitimlerinin okul müfredatına entegre edilerek öğrenenlerin daha sonraki öğrenme deneyimlerinde motivasyon açısından daha fazla harekete geçeceklerini işaret etmektedir.

Anahtar kelimeler: Yükleme eğitimi, nedensel yüklemeler, ideal ikinci dil benliği, vizyon eğitimi, ikinci dil motivasyonu.

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Language learning beliefs and motivational orientations of language learners play a pivotal role in shaping students' future actions and academic performance (Castro & Andrade-Arechiga, 2017; Kalaja et al., 2018; Oxford, 2017). One of the prominent motivational explanations is Attribution Theory, which has started to receive attention in applied linguistics in recent decades (Williams et al., 2015).

According to Attribution Theory (Weiner, 2000, 2018), people tend to explain the causes of their task or test performance with a reason they can have control over or with one that they cannot change, which restructures their subsequent decisions, actions, and success. To illustrate, when a person links their exam failure to the lack of enough studying (e.g., “I failed because I did not study enough for the exam”), s/he possibly puts more effort into learning the language in the future as s/he thinks the poor performance can be taken under control (causal dimension of controllability) and could change in the future (causal dimension of instability). Conversely, if that learner thinks that being unsuccessful results from the exam difficulty or the unfair grading of the teacher, s/he may not have control over the experience and could give up trying hard in the future. According to Weiner (1985, 2000), these perceived reasons are categorized into three main groups or causal dimensions, called internal, controllable, or stable, and they can imply learners' future actions and motivational patterns. That is, whether the attributed cause of the performance is within the control of the learner's actions (internal dimension), whether it is under their control (controllability) or whether the cause can change in the future (stability) shape the future motivation of the learner. Referring to external, uncontrollable, and unstable causes or attributions might degrade one's motivation. These ill-formed, past-rooted, and perception-based beliefs, such as referring to the “*bad teacher*” only for failure, could be transformed into more prospective and positive attributions with the help of AR (Erten, 2015). Therefore, we can define AR as a classroom-based motivation-enhancement treatment, which allows teachers to convince students that their self-explanations for previous performances may not reflect reality, and they can take more control over these causes for their future achievement (Erten, 2015; Haynes et al., 2009). According to Weiner (1985, 2018), the pioneer of the Attribution Theory, causal attributions mostly result from the learners' past experiences, which could inevitably project positive future experiences, and the teachers or researchers could change the fixed mindset of the learners with the help of AR implementations. In essence, past experiences could overshadow present beliefs and future endeavors, and this could be altered through AR implementations. The implementations used in AR could include reflection activities, certain videos aiming at convincing students to put more effort into learning or inviting senior students to share their experiences to motivate the learners.

The past, current, and future motivational process is also seen in another motivational construct, the ideal L2 self (Dörnyei, 2005), according to which learners may create an image of themselves as effective users of the target language based on the current self-image. Ideal L2 self is comprised of the attributes that a language learner wishes to possess, including but not limited to their hopes, aspirations, and desires in relation to their future language learning experiences (Csizér & Dörnyei, 2005). To illustrate, a learner might want to be a presenter in a meeting by speaking English fluently and effectively, which might be the ideal L2 self of the person in the future. Such hope or aspiration for the future is shaped by present beliefs based on past

experiences, and this could be done through vision training in motivational treatments (Chan, 2014; Magid, 2011). In vision training, the learners are led to their future image and motivated to remember their short-term and long-term goals to visualize their self-concept in the future.

The present study is significant in that it will be one of the rare studies on AR in EFL, and also it is the first study that will reveal the impact of AR integrated with the ideal L2 self as Attribution Theory presents us with a training path through which we can transform their past-rooted unhealthy beliefs into clearer ideal L2 self of the L2 learners (Martinović & Burić, 2021; Smith et al., 2020). It is also the first in the field to administer a valid attribution scale, developed by the researchers (Erten & Çağatay, 2020), in addition to a comprehensive set of data collection tools. In fact, in the language learning field, very few studies (Mahmoodi & Doosti, 2018; Matteucci, 2012; Semiz, 2011) were done on Attribution Retraining, and they offered some findings on the effect of AR on learners' causal dimensions; however, they (Mahmoodi & Doosti, 2018; Matteucci, 2012) focused only on the dimensions of the attributions, not the causal attributions themselves. These rare studies also explored the AR impact through questionnaires but not with psychometrically-validated scales, which stands as the most important methodological problem of the AR studies in EFL. Also, these studies did not triangulate their data through different measures. Different models of AR embedded with strategy training (Höl, 2016) or goal orientation training (Matteucci, 2012) have been applied in the field. However, considering the congruence between the past, present, and future relationship between beliefs and motivational patterns of the language learners (Çağatay & Erten, 2020a; Martinović & Burić, 2021; Smith et al., 2020; Zarrinabadi et al., 2021), to the best knowledge of the researcher, no study to date has looked into the integration of ideal L2 self with AR to reflect the prospective motivational paths of language learners. This research will address the gap in the literature by collecting data through a set of data collection tools. It will also test/develop a new model of motivational theory by combining the constructs of the ideal L2 self and AR.

In this vein, the present study attempts to devise an AR model incorporating elements of healthy attributions and ideal L2 self for language learners.

Literature Review

Attribution Theory

According to the pioneer of the Attribution Theory, Weiner (2000, 2018), attributions might be construed as perceived reasons and explanations accounting for students' performances in a task, test, or an activity. Attribution Theory proposes a three-dimensional structure of causal relations between task/test performance and reasons for these achievements. These dimensions are called *locus*, *stability*, and *controllability*, categorized into two opposite points as *internal* vs. *external*, *controllable* or *uncontrollable*, and *stable* and *unstable*. Drawing upon this categorization, the perceived causes of events, outcomes, or performances, such as perceived reasons for an exam result, can shape learners' possible long-term action and achievement. As to the meaning of the causal dimensions, *locus of causality* describes whether a cause is within personal control (*internal* vs. *external*), *stability* refers to

whether a reason can change or remain fixed, and *controllability* means whether the perceived cause is dependent on a personal choice or shaped by an external cause (Weiner, 1985, 2018).

Depending on their individual factors or contextual differences, many different causal attributions can be reported by learners for their language learning performances, including but not limited to *strategy, interest, mood, other people, or experiences* (Vispoel & Austin, 1995). However, which could facilitate and impede future actions depend on the causal dimensions of the attribution, as illustrated in the table below. Attributions may be deemed adaptive if classified as controllable and unstable or maladaptive if uncontrollable and stable (Chodkiewicz & Boyle, 2014; Erten, 2015). To exemplify, employing regular and effective *study habits* for one's test success might be regarded as adaptive as the learner could exert control over their effort, and the amount of effort to be made on the task changes from one performance to another. On the other hand, blaming the *teacher* for exam failure is considered a maladaptive attributional style as the instructor is an external, stable, and uncontrollable factor over which learners do not have any control to change it. Therefore, causal dimensions (controllability, stability, or locus of causality: internal/external) affect the future learning motivation, action, and performances of the learners (Weiner, 2018).

Table 1

Most Common Achievement Attributions and Their Causal Dimensions

	Locus of Control	Stability	Controllability
Ability (MAL)	internal	stable	uncontrollable
Effort (AD)	internal	unstable	controllable
Luck (MAL)	external	unstable	uncontrollable
Task difficulty (MAL)	external	stable	uncontrollable
Strategy (AD)	internal	unstable	controllable
Interest (AD)	internal	unstable	controllable
Family (MAL)	external	stable	uncontrollable
Teacher (MA)	external	stable	uncontrollable
School System (MAL)	external	stable	uncontrollable
Classroom Environment (MAL)	external	stable	uncontrollable
Health (MAL)	external	unstable	uncontrollable
Study Habits (AD)	internal	unstable	controllable

Note. AD stands for adaptive and MAL stands for maladaptive attributions (Çağatay & Erten, 2020b)

Attribution Retraining (AR) and Empirical Studies on AR

To reframe learners' maladaptive causal attributions into being adaptive and to help them to adopt less fixed accounts for their performance, Attribution Retraining (AR), as a motivation-enhancing treatment, is recommended for the school context

(Haynes et al., 2009; Perry et al., 2010). AR is defined as motivational treatment in which learners with the belief of low control or the ones with maladaptive attributional styles are offered some input of positive thinking of their future performances so that they give up their maladaptive or unhealthy attributions resulting from their previous experiences (Perry et al., 2010; Ruthig, et al., 2004; Weiner, 2018). As Haynes et al. (2009) posit, low-control students derive less benefit from effective instruction compared to the other students in the classroom. Thus, AR is well-suited to serve students with low self-control over their academic performance. Different AR models have been proposed, integrating various tenets of motivational underpinnings, such as goal orientation, positive thinking, and strategy instruction. However, the most commonly used one is the Haynes et al. (2009) model in the field of psychology and many other social sciences, as it incorporates systematic phases of retraining deeply rooted past beliefs. In their model used mainly in the field of psychology, the researchers aim to identify “motivationally and academically at-risk” students (Haynes et al., 2009, p. 253; Semiz, 2011), and the convener of the sessions could be psychologists, counselors, or a researcher who could lead the treatment. In the present study, after the data screening on 1006 students to identify the students with maladaptive attributions, the researcher conducted the AR sessions after regular class hours. As to the procedures of the AR, in the first phase, Pre-AR Diagnostic Assessment, and then in the Causal Search Activation step, students are asked to think retrospectively to express their perceived reasons for their past performances. After determining their causal attributions, in the AR induction stage, regarded as rehabilitation of maladaptive attributions, learners are encouraged to reconsider the perceived factors that prevent them from taking action. This way, they are redirected to focus more on the controllable reasons, aiming to reform them into more investment in the learning process. This facet of the treatment is important as the convener of the AR session attempts to convince the participants to adhere to their misconceptions and misbeliefs. The convener could help the students to think more positively and apply some practical ideas through videos or discussions or by inviting former students having previously experienced similar problems. To illustrate, the convener of the AR sessions could offer some role models for the students who endorse hard work (effort: controllable, unstable causal attribution) for the achievements rather than their luck (uncontrollable and stable attribution) on the exam date. The present study aims to embed AR into L2 learning classes with two goals: to convince L2 learners to transform their maladaptive attributions and to teach them how to make more effort. To achieve these goals, strategy-based activities for all language skills will be employed.

Although the present model of AR seems similar to the previous ones conducted in psychology in terms of goal orientation, or strategy training, the ideal L2 self, as a key component of language learning motivation, has not been included in the previous AR models. As promoting the ideal L2 self for their future goals could help learners to feel more distant from their previous maladaptive attributions, integrating it into the AR sessions might contribute to giving up the uncontrollable and stable reasons for their performances and could help the learners to focus on their future image and motivation.

Although Attribution Theory dates to the earlier 1980s in psychology, its use in SLA has been projected in research studies in the last decade. Höl (2016), Mahmoodi and Doosti (2018), Matteucci (2012), and Semiz (2011) implemented AR

treatment on language learners and measured the potential change from maladaptive to adaptive attributional styles. Mahmoodi and Doosti (2018), Matteucci (2012), and Semiz (2011) implemented Causal Dimension Scale II (McAuley et al., 1992) to measure the dimensions and they found an increase in the locus of causality, controllability, and decrease in stability, and except Semiz (2011), the studies yielded findings on the decrease in external control. Mahmoodi and Doosti (2018) and Höl (2016) also used an attribution questionnaire to examine whether their AR program makes any changes in learners' attributions. Mahmoodi and Doosti (2018) did not make inferential statistics to present the pre and posttest findings but rather revealed the mean scores in pre and the posttest. Höl (2016) showed that attribution to effort, ability, background, and luck could change after the AR treatment. However, the study employed a questionnaire instead of a scale, which might cast doubt on using inferential statistics. Semiz (2011), who also used a questionnaire to measure attributions, found that attributing to effort could increase after the AR treatment, similar to Mahmoodi and Doosti (2018) and Höl (2016). All these recent studies attempted to shed light on the potential effect of AR on language learners; however, one attribution was measured on one item only, and the questionnaires used were not considered to make inferential statistics (Pallant, 2011). The present study used both the attribution scale and the causal dimension scale to make inferential statistics rather than a questionnaire, which needs methodological validation in terms of the findings in this research.

L2 Motivational Self-System Theory

Another prominent and recent motivational theory is the L2 motivational self-system -L2MSS- (Pawlak, 2016), which incorporates the relationship between the past, present, and future beliefs (Dörnyei, 2005). The theory comprises three important facets: the ideal L2 self, the ought to self, and the L2 learning experience. Ideal L2 self is defined as a “representation of all the attributes that a person would like to possess” in the future in relation to the second language (Csizér & Dörnyei, 2005, p. 616), which is the central component of this motivational framework. To exemplify, if a learner imagines himself/herself as a fluent and effective user of English in social or academic life, that person is likely to attain that image and endeavor to lessen “the discrepancy between the current self and the future self” (Dörnyei, 2005, p. 217). Having a clear ideal L2 self, a learner could be more motivated to have a better command of English. The second one is the ought to self, referring to external reasons, duties, or responsibilities that drive one to take action, such as learning a language because the learner has to finish a university with an English medium instruction. Representing the future self of a learner, the ideal L2 self proved more influential in predicting future success as it has an intricate bond with a learner's aspirations, hopes, and dreams which trigger positive images in one's mind. Rather than a force that requires one to learn a language, this future imagination or ideal L2 self enables him/her to take immediate action to attain it (Chan, 2014; Dörnyei, 2005). The last component of L2MSS is the language learning experience, “which is concerned with attitudes and evaluations of the present learning environment” (Al Hoori, 2018, p.725). Despite the possible existence of a future self of a learner, it may not suffice to take proactive actions on the part of the learner. In fact, learners with clearer and more detailed imagination of themselves in the future have a tendency to be more mentally active and take steps to achieve that future self. Thus, to foster a clearer and more vivid ideal L2 self of the learners in their

imagination for a long time and to assist learners in reflecting this in their actions, vision training is recommended in the literature (Chan, 2014; Dörnyei, 2005; Magid, 2011). Vision training is described as a motivational program designed to develop an ideal L2 self by creating a language learning vision with the help of imagery enhancement (Dörnyei & Chan, 2013; Hadfield & Dörnyei, 2013). According to Dörnyei and Chan (2013), ideal L2 self-activities are designed to ease future identity formation and to empower students' future self-images. This re-conceptualization of self through future reference is similar to the AR impact, which derives from past experiences, and sets a basis for the AR treatment in this study.

Significance of the Study

Considering the scarcity of AR studies in the second language learning field (Höl, 2016; Mahmoodi & Doosti, 2018; Matteucci, 2012; Semiz, 2011) and the relationship between the past beliefs, attributions, and the ideal L2 self for the future, the present study offers new insights to the field. At the local level, the findings of this study may help language instructors to understand the potential for increasing the motivational orientations of the students, developing an adaptive mindset, and promoting the language learners' ideal L2 self when using AR methods and may contribute to their language instruction practices and ultimately to the students' language achievement.

To test the effectiveness of the devised AR, the following research questions were formulated:

1. Can a program of AR improve language learners' maladaptive causal attributions?
 - a. Can the AR model contribute to more *locus of causality*, less *stability* and less *external control*?
 - b. Can the AR model improve adaptive attributions and lessen maladaptive causal attributions?
2. What is the effect of the AR model on fostering a clearer ideal L2 self of language learners?

Methodology

To examine the impact of AR intervention – if any – on the students' causal dimension, causal attributions, and ideal L2 self, the researcher piloted the AR implementation, and the data collection tools one semester before the main study. The pilot study was conducted at a state university in Turkey. The Department of Basic English (DBE) of this university offers students general and academic English courses. Prior to commencing this foundation year of their tertiary education, an in-house placement test is administered to newly registered students who are then placed in levels as Beginner (A1), Elementary (A1+), Pre-Intermediate (A2), Intermediate (A2+) and Upper-Intermediate (B1). For the pilot study, 767 students at the A2 level at DBE were given Causal Dimension Scale-II (McAuley et al., 1992), the Language Achievement Causal Attribution Scales (LACAS) (Erten & Çağatay, 2020), and the ideal L2 self scale (Taguchi et al., 2009) for the data screening; twelve students with maladaptive attributions were identified among 767 students, and they were informed about the

sessions and invited. Only eight students accepted and attended all the pilot AR sessions.

The AR sessions in the pilot study delivered were composed of only four sessions. The first one, Causal Activation phase, focused on searching for the causal attributions for the previous midterm exam by getting students to write their causes of the previous failure on a handout. In the second session, AR consolidation, participants were given a task where they were expected to write about their causes and then had them find out the adaptive versions of their attributions in pairs. The students were also shown a video of former students talking about their reasons for their failure in the same school and how they changed their perspective. However, this video did not receive positive feedback from the participants because of the sound quality, and they wanted to see a live guest speaker with whom they could interact. In the third and fourth stage, the researcher helped the participants dream about their ideal L2 selves with some activities in Hadfield and Dörnyei (2013). After finishing this intervention, based on the feedback received, inviting guest speakers both for attribution and ideal L2 self promotion and using more specific strategy use in language learning emerged as the necessary components that could be added to the main study. In order to design an effective method of AR treatment, feedback and statistical data were collected and analyzed based on the pilot study, as presented in Çağatay and Erten (2020b). Therefore, a more detailed and extended version of the AR treatment was designed, and the details are explained in the following.

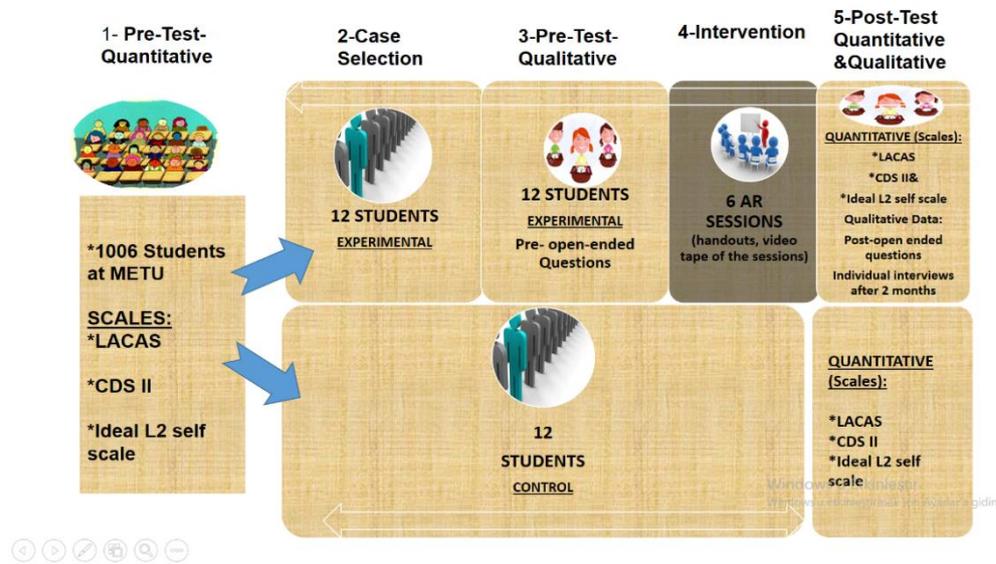
Participants and Data Collection Procedures

In the following academic year, the main study was conducted with different levels of students over a longer period. As Haynes et al. (2009) suggested, in order to identify the most suitable potential AR participants, data screening across a large group was needed. To ensure purposeful sampling, first, the researcher implemented a data screening process on 1006 first-year students at the *Beginner (A1)*, *Elementary (A1+)*, and *Pre-Intermediate (A2)* levels at the same institution to identify the students with maladaptive attributional styles after they took their first achievement exam or the midterm exam. Then, 1006 students were given hardcopies of CDS II, LACAS, and ideal L2 self scales. The low proficiency levels were purposefully included for the data screening as it was more probable for maladaptive students to exist at lower levels (Haynes et al., 2009; Perry et al., 2010). Eligibility criteria required individuals to have received low scores on the midterm exam as a measurement of achievement – high *external control* and *stability*, low *controllability* scores as indicators of maladaptive attributional style – and low scores on ideal L2 self scales as an indicator of a vague vision. Based on these criteria, 44 students were then selected based on these criteria and invited to the AR sessions. A random sample of participants from this selected group was divided into two as experimental and control groups (N = 22 for each).

As Chodkiewicz and Boyle (2014), Haynes et al. (2009), and McDowell (2009) suggest, AR interventions are typically conducted with small groups who feel less control over events and who have experienced a change in life, such as moving to a new place or starting school or university. Considering these criteria, the number and profile of the participants were well-suited for the purpose of the present study.

Data collection lasted eleven weeks, and it took the researchers to conduct the AR sessions six weeks in total. The sessions were conducted after the students' regular classes ended as students with maladaptive attributional styles were selected. The new AR model was devised based upon the proposed model of Haynes et al. (2009) in the field of psychology. However, some steps were phased out or combined as a result of the findings from the pilot study. The customized model of AR, hereby, is also different from the previous ones in the sense that it aims at transforming the unhealthy and past-related beliefs into more adaptive and positive mindsets by fostering the future selves of the language learners. The activities explained in the following parts were mainly focused on language learning motivational activities, such as discussing why fixed language ability cannot account for our previous performances.

Figure 1
The Research Design



The present study attempted to offer action-oriented or solution-focused sessions for the learners. Before starting the sessions, the data screening through the causal dimension scale, causal attribution scale, and ideal L2 self scale were performed in the first two weeks after the students took their first midterm exam. As a pre-test, 18 open-ended questions in the written format were also given to the experimental and control group participants to explore further their maladaptive style. These questions were prepared with an experienced scholar in attribution theory, and the questions were piloted in the pilot study. After selecting the participants and contacting them to ask for their voluntary participation, the researcher mainly conducted the program with the experimental group after their regular class hours, and the control group attended their regular classes without being exposed to any motivational treatment. The sessions were held after their English classes so that they did not affect any administrative or procedural issues in the school. In week 3, during the AR sessions, students were expected to watch videos which lasted around seven minutes, to be engaged in the program to reflect on their causal attributions for the midterm exam. In alignment with diagnosing the maladaptive attributions, the researcher elicited their causal ascriptions

for their poor performance and led them to more action-oriented beliefs by showing some motivational videos on YouTube channels (Motivating Success, 2012; Sayan Kileci, M. 2012), proposing or brainstorming practical solutions they could implement on the campus or raising their awareness of language study skills. These solutions included, but not limited to accessing the right resources in English in the learning center or learning more effective study habits in English learning through workshops offered by some other centers in the university. As for the AR consolidation component, in week 4, the students were given a handout on which they wrote the reasons for their performance and the possible solutions through discussion with their peers. To empower the adaptive attributions, a freshmen student, who was one of the participants of the AR sessions in the pilot study done in the previous semester, was invited to deliver a speech on how to cope with possible problems with exams or with poor achievement in the language learning process. Then, the students were tasked to reflect upon their attributions on a handout. Different from the previous studies (Höl, 2016; Mahmoodi & Doosti, 2018; Semiz, 2011), which focused more on general cases of attribution in learning, each specific unhealthy causal attribution, signaling the maladaptive style was addressed and discussed with students in the present study. To illustrate, when the students came up with the lack of ability as a reason for their poor exam performance, the researcher introduced the idea of a growth mindset which allows people to think that ability is not a stable asset but could be promoted through effective language learning strategies and study habits with the help of scientific research. This was also consolidated by having students watch videos -shot specifically for language learners. The video included a teacher sharing the experiences of his former students with adaptive and maladaptive learning styles. Also, two different students, having received the same language education in the same institution before explained how their reference to the fixed attributions, such as clinging to the lack of ability as an obstacle to learning English or poor exam performance, has changed into valuing more effort and effective strategy use. The researcher further helped them to engage more in language learning through an interactive presentation. In week 5, to further promote skill development, an English instructor was invited to give a presentation on how to study each skill, including grammar and vocabulary in English. The students were expected to complete a graphic organizer to take notes on the session. In week 6, participants were guided towards setting specific, measurable, achievable, realistic, and time-framed (SMART) short-term and long-term goals by having them watch about the definitions of such goals, discussing them with their peers, and writing them on a handout given. In week 7, the participants' future aims were set more clearly by some activities, and moreover a graduate of the same university was invited by the researchers to share her language learning process during her undergraduate years and the contribution of her language competencies to be accepted to a highly regarded university in an English-speaking country. She was chosen as she could be a good role model as a successful student and a businesswoman who had graduated from the same university. Drawing upon her experiences in her work life related to using English, she also attempted to foster her ideal L2 self in her professional life. In the following week, the researcher delivered a speech on her own language learning experiences, her maladaptive attributions, the wrong strategies she employed, and how she overcame these problems to present herself as a role model. All these steps in the AR model were designed specifically for language learners, which differentiates the present study from the former

ones. In the last two weeks, post-tests, including all the scales and open-ended questions, were given to both groups of students. However, the response rate was very low in the control group in terms of the qualitative data. To be able to see the longer effect of AR, if any, and not to give the same scales for the third time, individual semi-structured interviews were conducted with the experimental group students two months after the AR sessions.

Data Collection Instruments

Data were gathered from multiple quantitative and qualitative sources during the pre-and post-tests. As quantitative measures, Causal Dimension Scale II, Language Achievement Attribution Scale, and ideal L2 self scales were employed, while for qualitative measures, pre and post open-ended questions in written forms and semi-structured interviews at the end of the AR sessions were used. The first scale, CDS II (McAuley et al., 1992), includes *locus of causality* (three items, $\alpha = .69$), *personal control* (three items, $\alpha = .74$), *stability* (three items, $\alpha = .77$) and *external control* (three items, $\alpha = .66$) subscales in it with twelve questions. A sample question in the scale starts from point nine, referring to *the cause of my performance that reflects an aspect of yourself*, to point 1, meaning *an aspect that reflects of the situation*. This nine-item causal scale was used to ascertain the effectiveness of the attribution retraining with respect to improving *personal control* and *locus of causality* items while downplaying *stability* and *external control*.

The Language Achievement Causal Attribution Scale (LACAS) (Erten & Çağatay, 2020; 29 items, $\alpha = .87$) addresses nine causal attributions: *ability* ($\alpha = .87$), *effort* ($\alpha = .90$), *luck* ($\alpha = .72$), *task difficulty* ($\alpha = .68$), *family* ($\alpha = .86$), *teacher* ($\alpha = .80$), *school system* ($\alpha = .79$), *classroom environment* ($\alpha = .76$) and *health* ($\alpha = .83$), through 29 questions. The items include such statements as “I received the score because...” and the sentence is completed with one of the nine attributions measured in LACAS. The Ideal L2 self scale (Taguchi et al., 2009) has 10 questions with a Cronbach’s alpha score of .90.

As for the qualitative part of the study, before and after the AR intervention, open-ended questions, and interviews to explore students’ causal attributions, as well as their vision for the future, were given to both the experimental and the control group. The open-ended questions and the interview protocol were prepared in cooperation with another expert researcher in attribution studies. Although the initial aim was to collect qualitative data from both the experimental and the control group, most of the control group participants dropped out of the qualitative phase of the study. For this reason, only the responses from the experimental group (N=12) were included in the analyses. As interviews were conducted after two months to be able to see the long-term effect of the intervention, mostly the same questions with the open-ended questions were directed to the participants of the AR sessions (N=12).

Both in the open-ended questions and the interviews, the content covered such questions as the students’ overall perception of their English proficiency level, their ideas on the previous midterm performance, the underlying reasons for this performance, and also whether these reasons are controllable or changeable. The researcher also tried to enable the participants to expand on their perception of themselves by asking whether they use any strategy to eliminate the unhealthy causes

for their performances. As to the “ideal L2 self” construct, the researcher addressed such questions as whether the participants have any dreams or goals about their education or job related to English use and whether they take any actions to realize these aims.

However, the control group did not respond to the qualitative measurement tools. Given the supplementary role of the qualitative strand of the study to enhance the quantitative part, the present study was designed as a quasi-experimental mixed-method design (Creswell & Clark, 2007). In this way, the researcher could embed a qualitative strand to scrutinize the intervention process or to account for the participants' responses (Creswell & Clark, 2007). Open-ended questions included questions on learners' perceived causes of the exam performance with the reasons and explanations, how they felt and what dreams they had in relation to the use of English. In the interview, more specific questions on their previously-reported attributions of each participant or on their ideal L2 self, which were prepared by the researchers, were asked by elaboration questions, or trying to reveal whether the changes –if any- were caused by the AR sessions. The individual interviews lasted a minimum of 45 minutes for each participant and took two weeks.

Causal dimension scale (CDS II), Language achievement attribution scale, and ideal L2 self-scale were given to 1006 students to identify the students who need the AR sessions during their regular class hours. After determining the students, open ended questions (pre-open ended questions) were given to 12 students in the experimental group and 12 students in the control group before the AR sessions started. After the treatment, these scales and the open-ended questions (post open-ended questions) were given to both the experimental and the control group to observe possible changes, if any. After two months, semi-structured interviews were conducted with all the participants in the experimental group on an individual basis.

Regarding the ethical procedures of the study, approval was granted by the Hacettepe University, Turkey, Research Ethics Committee (ref: 4332684). All participants provided written informed consent to participate voluntarily in the study.

Data Analysis

Being involved in attribution retraining affected the participants' causal dimensions, causal attributions, and ideal L2 self as opposed to the treatment being examined through a one-way analysis of covariance (ANCOVA) test on SPSS version 21.0. Moreover, the potential change from the pre-test to the post-test in the treatment group was examined using a non-parametric Wilcoxon Signed Ranks test, as the number of the participants was low. The alpha level was set at $p < .05$. The qualitative data of the open-ended papers and the interview transcriptions were analyzed using Atlas.ti 7 software. Before the analysis stage, the interview records were first closely auditioned and transcribed, and the participants' names were replaced with pseudo-names for confidentiality. The open-ended question papers were read with great care for the analysis and translated into English with two English instructors working at the tertiary level. Once the documents were uploaded onto the software, 10% of the open-ended questions (pre), 10% of the open-ended (post-) questions, and 10% of the interview transcripts were sent to another researcher specializing in attribution studies. Employing both a deductive approach based on the constructs existing in the scales

(e.g., effort, ability...) and an inductive approach allowing the researchers to find out the themes or codes which are non-existent in the scales (e.g., strategy, interest...), the researchers scrutinized the transcripts of each participant. The validity and inter-reliability of the qualitative parts of the study were ensured through Kappa scores, which were found to be .96, .95, and .91, respectively for the pre-open-ended questions, post-open-ended questions, and the interviews, conforming to the perfect range (Stemler, 2001, p. 4). Below are the codes and the themes found both in the pre and post open ended questions and also in the semi-structured interviews. The green-coded attributions are signs of adaptive attributions as they are controllable and unstable, and the participants of the intervention are guided towards these attributions during the AR sessions.

Figure 2

Codes and Themes of the Qualitative Analysis

Themes	Sub-Themes
Existing Themes in the Scale (Deductive Analysis)	
Effort	Not studying hard Not preparing for the exam
Ability	Lack of aptitude Poor memory skills
Task difficulty	Difficulty of the exam questions
Luck	Exam-specific problems such as outside noise The congruence between the studied points and the exam questions by chance
School system	Education system at METU Instructional problems Teaching systems
Classroom environment	Demotivating classroom climate/atmosphere No interaction in the classroom
Health problems	Sleeping disorders Health issues during the exam (e.g. headache, nausea...)
Family	Family problems Financial issues
Teacher	Unfair grading Ineffective teaching methods Personality clashes with the teacher

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Emerged Themes (Inductive Analysis)	
Study habits	Studying on a regular basis Revision of the topics
Strategy	Wrong approach to learning English Lack of learning skills and strategies
Interest	Interest in learning English Interest in learning new content knowledge in English
Self-beliefs	Low self-efficacy Low self-perception
Lack of knowledge	Lack of background knowledge Lack of grammar knowledge Lack of vocabulary knowledge
Personality	Outgoing Introvert
Personal issues	Breaking up with a partner Problems with a flat mate
Motivation	Not valuing the language Dislike for English
Lack of guidance	Not having enough support in learning English
Anxiety	Writing anxiety Speaking anxiety
Concentration problems	Difficulty in focusing on something for a long time

Findings

The Effect of an AR program on Language Learners’ Maladaptive Causal Attributions

In this section, the quantitative findings on whether the AR contributed to the causal attributions and dimensions will be presented along with the qualitative results of the treatment effectiveness.

The Effect of an AR program on Locus of Causality, Less Stability and Less External Control

A one-way ANCOVA was conducted to compare the effectiveness of the AR whilst controlling for the pre-treatment scores in causal dimensions. Preliminary analyses, including normality, homogeneity of variances, reliability of the covariate, and Levene’s test of equity of error variances, were performed with no violation being identified. The treatment apparently causes some changes in *locus of causality, personal control, and stability*. The details of the findings are shown below.

Table 2
Most Common Achievement Attributions and Their Dimensions

Variable	Experimental	Control	<i>p</i>
Adjusted mean scores = Mean Scores			
LoC	7.13	5.97	.049
Personal Control	7.66	6.30	.020
Stability	2.08	3.27	.033
External Control	3.91	4.27	.458

Based on the findings in this table, the intervention group made significant gains over the comparison students in *locus of causality* ($F(1,22) = 4.325, p = .049, \eta_p^2 = .164$), *personal control* ($F(1,22) = 6.236, p = .020, \eta_p^2 = .221$) and *instability of achievement attributions* ($F(1,22) = 5.169, p = 0.00, \eta_p^2 = 1.90$) although the adjusted mean score in *external control* failed to achieve statistical significance, likely due to the small sample size of the participants. However, the treatment seems to have brought about a downward trend, yielding a promising implication for long-term AR implementations.

The Effect of an AR program on Attributions and Maladaptive Causal Attributions

After assuring the preliminary analysis, the researcher performed a one-way ANCOVA to assess whether the AR treatment exerted any impact on modifying the maladaptive attributions into adaptive attributions. Results indicated that the greatest change was observed in the attribution of *effort* only, as seen in Table 3.

Table 3
ANCOVA Results for the AR Treatment Based on LACAS

Variable	Experimental	Control	<i>p</i>
Adjusted mean scores = Mean Scores			
Effort	1.76	2.76	.007
School System	3.47	3.37	.791
Teacher	3.47	4.04	.124
Family	3.83	3.83	.1
Luck	4.16	3.45	.082
Classroom Environment	3.33	4.04	.089
Task Difficulty	3.58	3	.087
Ability	3.29	2.67	.095
Health	4.38	3.47	.056

Except for *effort* (Experimental = 1.76; Control = 2.76; $F(1,22) = 8.984, p = .007; \eta_p^2 = .290$), the findings showed that the experimental group participants did not display any motivational orientations in terms of their causal attributions. No statistically significant change in the attribution to the *school system, teacher, family, luck, classroom environment, task difficulty, ability, or health* was observed in the experimental group based on the AR implementation, as illustrated in Table 3 ($p > .05$).

Within Group Comparison of The Effect of an AR program on Attributions and Maladaptive Causal Attributions

The causal attributions of the treatment groups were compared from the pre-AR to the post-intervention based on a Wilcoxon Signed Ranks Test. Table 2 shows that a

statistically significant difference was found in the participants' *effort* ($z = -1.973$, $p = .049$ with a large effect size of $r = .57$), *teacher* ($z = -2.308$, $p = .021$, with a large size effect ($r > 0.5$) and *luck* ($z = -2.316$, $p = .021$, $r = .66$) and *task difficulty* ($z = -2.053$, $p = .040$, $r = .59$).

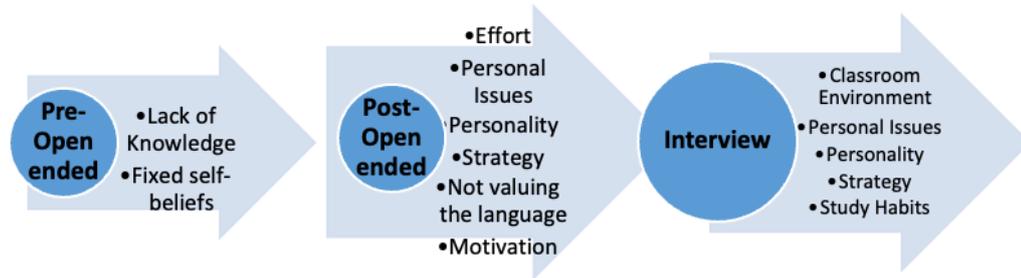
Table 4
Differences from the Pre-test to the Post-test

		N	Pre-test	Post Test	p	r	Ties
Effort	AR	12	2.10	1.80	.049	.57	4
	Control	12	2.10	2.40	.209		3
School System	AR	12	3.5	3.62	.445		0
	Control	12	3.87	3.37	.328		2
Teacher	AR	12	4.00	3.87	.021	.66	3
	Control	12	4.25	4.00	.170		3
Family	AR	12	3.75	4.00	.103		3
	Control	12	4.00	4.00	.071		6
Luck	AR	12	3.00	4.5	.021	.66	4
	Control	12	3.5	3.75	.714		3
Classroom Environment	AR	12	3.25	3.75	.361		3
	Control	12	4.00	4.00	.516		6
Task Difficulty	AR	12	3.5	3.33	.040	.59	4
	Control	12	3.33	3.33	.060		2
Ability	AR	12	3.00	3.25	.053		0
	Control	12	3.12	3	.482		3
Health	AR	12	4.5	4.83	.205		4
	Control	12	3.83	3.5	.798		2

Qualitative Findings of the Effect of an AR program on Attributions and Maladaptive Causal Attributions

The qualitative analysis is presented as a flow for individual students to display the possible change in the time-lapse. The students in the experimental group mentioned several causal attributions in addition to those measured in LACAS, enabling the researcher to explore the depth of the awareness of the participants and further the findings in the quantitative part. In all cases, students started to gain a deeper insight into their respective cases of failure, and they endorsed more adaptive causes compared to the beginning. For example, Bade initially only referred to *fixed self-beliefs* and *the lack of knowledge*. However, she turned her focus to more detailed *internal* and *controllable* reasons as *personality*, *the use of strategy* and *not valuing the language*. All these are intertwined with motivational issues and are malleable with some actions. She made more links to the *lack of study habits* at the end, which also provides some proof in her deeper awareness of her previous performance. Below is a figure illustrating her change.

Figure 3

Causal Attributions Throughout the AR Sessions: Bade's Case

Below are some sample expressions of her causal attributions:

Pre-intervention (open-ended questions):

I didn't have enough vocabulary knowledge. (*lack of knowledge*)

It would have been weird to get a high score for somebody who is previously stuck with the idea of getting a score of 60 out of 100 at most. (*fixed self-beliefs*)

It appears that AR has raised some awareness on Bade's part in embracing better *study habits* and referring more to the lack of *study habits* in the exam. She makes this change a positive experience:

Post-intervention (open-ended questions):

Before the AR sessions, I didn't know how to set up everything, how to study English and that studying might have fun sides in it. (*strategy /motivation*)

Post-intervention (interview):

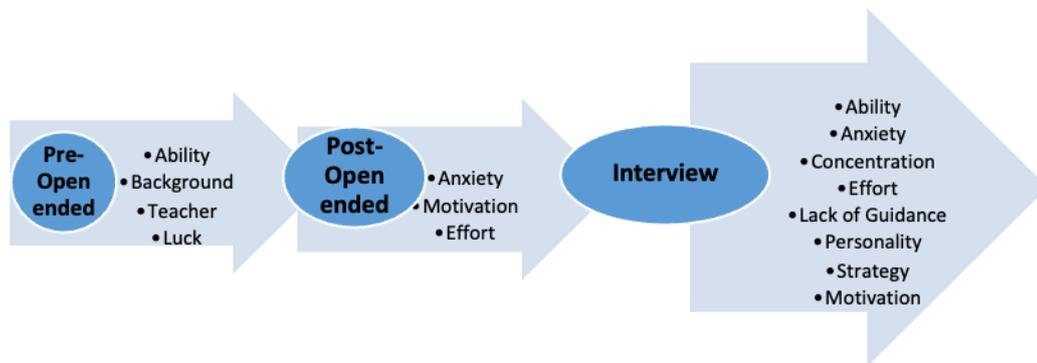
Bade: Up to now, I haven't studied on a regular and daily basis. In such a case, it was ok in the other classes, I mean I could survive it even if I didn't study regularly, but in English, it didn't work. "Pomodoro technique" ...I set 25 minutes, and then the clock went off. I made it stop, and set it for 25 minutes, and took a five-minute break. Then I made it fully stop, I kept on studying. (*study habits*)

As seen above, Bade expressed that she had learnt to put the technique she learned in the AR sessions into her real-life practice. It is also apparent that she started to be aware of the lack of this habit before the AR sessions, so she seems to have become more adaptive concerning her attributions.

A similar change in terms of having a deeper and more objective understanding of the causes is seen in Emir's case. While he put the blame of his failure on the lack of *ability*, *background knowledge*, or the *teacher*, which are all uncontrollable attributions, he started to state more *personal*, *internal*, and *controllable* attributions after the AR. The details are seen below in Figure 4.

Figure 4

Causal Attributions throughout the AR Sessions: Emir's Case



Emir's sample quotations will be presented below:

Pre-intervention (open-ended questions):

My failure might have resulted from the lack of *ability* and *lack of poor memory skills (ability)*

.. Some of the reasons stem from my background experiences. In the past, I was successful in my lessons, but English was horrible. I wasn't lucky during my primary school and high school years in terms of my English teachers. I felt isolated from English learning. These teachers made me feel that English is a difficult language to learn (*background; teacher*)

It was all to do with *luck...*(*luck*)

Post-intervention (open-ended questions):

I did not study for the midterm, but now I try to listen to the lessons more attentively and trying to answer the instructors' questions. I reviewed the lessons we covered before. I keep a vocabulary journal and watch soap operas in English (*lack of effort; strategy*)

Post-intervention (interview):

Researcher: How did you study before the first midterm?

Emir: I wrote English-Turkish translation, vocabulary, I mean adjective /adverb forms, that is it (*strategy*) before the midterm exam. Now, I am making sentences, and I am writing depending on the specific meaning of the word (*strategy*).

In Emir's attributions, it is clear that he started to place more importance on the lack of *effort* or the lack of *strategy use* in his learning; but he still gave reference to the lack of ability. However, he started to be more aware, wanting to adapt to new techniques he learnt in the AR sessions through getting more guidance, adjusting to his learning style, getting effective *study habits*, and also putting more *effort* into the process. It is also important to highlight that giving up attributing to uncontrollable reasons such as *teacher* and *luck* after the AR sessions seem to consolidate the findings in the quantitative analysis in that these attributions became less worthy. In line with the quantitative findings, Emir started to endorse a lack of enough *effort* in his exam performance, similar to the other participants.

The Effect of AR Model on Adaptive Attributions and Maladaptive Causal Attributions

A one-way between-subjects analysis of covariance was carried out to assess the impact of exposure to Attribution Retraining embedded with vision training on the

treatment group. The between subjects factor comprised two groups: the AR group and a control group of students. The covariate comprised the pre-test scores of ideal L2 self. The findings are illustrated below:

Table 5

Effect of AR on the Ideal L2 Self

Variable	Experimental	Control	<i>p</i>
Adjusted mean scores = Mean Scores			
Ideal L2 self	3.87	3.11	.025

Adjusting for this covariate resulted in a significant effect of the between-subjects factor group: $F(1,22) = 5.769, p = .025, \eta_p^2 = .208$. The adjusted mean ideal L2 self score for those exposed to the AR was 3.87 to 3.11 (control group).

Table 6

Differences from the Pre-test to the Post-test

Variable		N	Pre-test	Post-test	<i>p</i>	<i>r</i>	Ties
Ideal L2 Self	AR	12	3.4	4.05	.016	.6	0
	Control	12	2.65	3.10	.058		0

The Wilcoxon Signed Ranks test unveiled that the experimental group surpassed the control group with regard to the ideal L2 self score ($z = -2.400, p = .016, r = .6$) when compared with those who did not ($z = 1.894, p = .058$).

The effect of the AR sessions, if any, was further examined utilizing the pre- and post-open-ended questions and interview questions similar to the attributions. The majority of the students in the experimental group ($N = 10$) noted their dreams of using English, and the analysis revealed that the participants of the intervention began to have clearer, more expanded, and also more vivid imaginations of themselves as users of English in the future. Mustafa is a sample student who initially had an overall future self, but his unfocused ideal self appears to have been reframed into something more detailed and personalized after the intervention:

Pre-intervention (open-ended questions)

Finding a job has a role in my motivation, but I feel obliged to learn English on my way to the realization of my dreams.

The qualitative findings showed that Mustafa's vision, dreams, and aspirations for his future career became more elaborate and enriched, as seen below:

Post-intervention (open-ended questions)

I frequently have dreams about English. I speak at work with my colleagues in a foreign country or at an international company. I visualize myself as a senior boss.

Emir also has displayed a change in his ideal L2 self, as seen in the following sample excerpts:

Pre-intervention (open-ended questions)

I can't imagine myself, I wish I could. For example, I imagine myself making a presentation on a project on architecture.

Although Emir has a similar dream about the future in the post-test, he tried to implement some personal methods to realize his dream as expressed in the post-open-ended questions. He set more tangible goals at the end, as shown in the interview findings below:

Post-intervention (open-ended questions)

I imagine myself making a presentation on a project of architecture. I have started to watch some documentaries on architecture in English.

Post-intervention (interview)

Researcher: What is your future goal after graduation?

Emir: At first, I thought it might be abroad, in Japan. For my own sake, I can travel around the country. I don't know, I am not sure whether I will stay in the same place, but I can work in offices or offices related to architecture.

Discussion

The present study attempted to disclose the potential impact of an AR abridged with vision training to alleviate students' demotivation, impeding them from taking action and generating more constructive motivational patterns. The changes in causal dimensions based on CDS II (McAuley et al. 1992) provided solid proof of the positive effect of AR on causal dimensions (Haynes et al., 2009; Weiner, 2000, 2018). The first finding that reveals the positive contribution of AR is that the participants of the treatment started expressing certain features of adaptive attributional styles. The experimental group began to believe more that their performance was within their control than they were less dependent on external factors compared to the control group beliefs, which may help learners avoid self-protective beliefs. Haynes et al. (2009) posit that those who have a self-protective approach are less likely to persevere and succeed in the long run. Resonating with the studies of Semiz (2011) and Groves (2014), feeling more control over the event increases the possibility of inducing more persistence and future expectancy in return for achievement. Moreover, based on the causal dimension scale, most of the participants in the experimental group seem to believe that the causes of their previous performance started to be perceived as being unstable. The change in adaptive causal dimensions corroborates the previous studies (e.g., Haynes et al., 2009; Mahmoodi & Doosti, 2018; Matteucci, 2012; Morris, 2013) in the sense that the AR used in these studies were effective in promoting locus of causality and controllability whereas the intervention caused a decrease in stability and external control.

The desirable changes in causal dimensions after the AR treatment are also consolidated by the changes in the specific attributions. When compared with the control group attributions, a statistically significant increase in *effort* can be seen in terms of the AR participants' references to the previous performances. This means that the experimental group acknowledged their lack of sufficient *effort* in the process and are likely to undertake their responsibilities by investing more in their subsequent performance. The increase in *effort*, as well as a decrease in the attribution to the *teacher*, and *task difficulty*, which are external and stable causes, also support the effect of AR on the participants' positively changing mindsets and a display of more adaptive styles. Similar to the participants of Höl (2016) and Semiz (2011), *effort* was promoted

more by the students after the intervention, which is parallel with the findings above on causal dimensions. Based on the reliable and valid attribution scale, LACAS (Erten & Çağatay, 2020), this study presents the tendency to blame uncontrollable reasons, such as *task difficulty* and *teacher*, which further supports the devaluation of the maladaptive attributions after the AR treatment. Although members of collectivist cultures, such as Turkey, tend to relate their academic performance to teachers (Erten & Burden, 2014; Gobel & Mori, 2007), it was revealed that the present AR model could have transformed these demotivating beliefs in referring to uncontrollable and stable factors into more action-oriented reasons such as using *strategies* or making more *effort*.

The enhancement in causal dimensions and the attributions in the quantitative data resonate with the qualitative data in that participants of AR have promoted more adaptive attributions as *effort*.

The participants of AR seem to have formed more adaptive explanations for their previous performances, such as *study habits*, *use of strategy*, or more personal reasons upon which they can act. Given this flexibility in their beliefs (Kalaja et al., 2018) after the intervention, participants seem to have moved away from being constrained to maladaptive beliefs through AR activities. Based on the immediate post AR data and also the interviews conducted after some time, it is noteworthy that the learners have started to refer to the employment of strategies that they learned during the AR sessions. As Weiner (1985, 2000, 2018) postulates in his theory, the participants could sustain their motivation as well as *effort* for a long time to attain their academic goals, which may bolster their achievement.

In addition to the changes in adaptive attributions after the treatment, promising differences in the ideal L2 self were observed on both quantitative and qualitative measures. Learners demonstrated an increase in their clearer, more vivid, more detailed future selves. Suggestive of internal drive to put more *effort* into attaining the future image of a learner, the data also implies that learners could develop a flexible mindset with which they can exert control over their future processes by investing more *effort* and by employing strategies in language learning or by being more active in the use of language as exemplified in the qualitative data. The positive change in the ideal L2 self is in keeping with the findings of Chan (2014), Magid (2011), and Munezane (2015). Despite the short span of treatment of AR and vision training, it was found that beliefs about the past, attributions, and beliefs about the future and ideal L2 self also contribute together to the future image of the learner, promoting the effective use of *strategy* and regular *study habits* in return. In essence, the present study validates beliefs about the past, the present, and the future shaping the motivational changes of the learners together, as Williams et al. (2015) elucidated in detail.

Conclusion

This study aimed to substantiate the favorable effect of a newly-designed AR program embedded with vision training. Considering the paucity of research on AR in the language learning field, the present study provides insight into the possible integration of rehabilitation of unhealthy beliefs by relating to the past and future. Moreover, it has tracked the changes in the participants' motivational patterns through different measures of the quantitative and the qualitative flow of data.

One contribution of this study to second language learning is that by employing reliable and valid attribution scales along with causal dimension scales, the study presents more psychometrically-robust findings as the previous ones used surveys only for the analyses of attributions. Also, the previous studies based their findings solely on dimension scales such as controllability and stability; however, tracking the learners' motivational changes for a long span and with specific attributions, such as effort and luck, could provide a much clearer picture of the learners' maladaptive beliefs and this could pave the way for more effective actions to be done in AR. Another methodological advantage of the study is that the attributional as well as ideal L2 self-related changes were tracked through pre, and two different ways of post-qualitative data, which yielded a deeper understanding of the changes. Last but not least, the previous studies either followed exactly the same steps of AR, used in the field of psychology (Doosti, 2018; Matteucci, 2012; Semiz, 2011) or one study only focused on strategy training in their AR model (Höl, 2016). This study seems to be the first in piloting an AR model before the main study and also in customizing the steps of AR for contextual and language-specific motivation through vision training. In this sense, the study might bring a new perspective by proposing a more tailor-made model of AR for language learning, integrated with vision training to promote both the adaptive attributions and the ideal L2 self for the first time. Also, the embedded model devised and employed in the present study may yield some innovative and hands-on implementations in language learning contexts.

As to the limitations of the study, the present study administered the intervention to a small group of participants within a limited amount of time. Another limitation is that the study falls short of the qualitative data for the control group because of the drop-outs. If the study can be done for a longer span with more participants, including the control group, the findings could be more generalizable for language learners in different contexts. Also, the AR sessions were conducted after class hours, it could be more effective if it is embedded into the school curriculum and classroom activities.

Considering the changes in adaptive attributions as well as the ideal selves of the learners in the present study during a semester, a model of AR being embedded into the school curriculum over a longer period of time could reveal more in-depth changes in the learners' belief systems. By moving towards future goals and future images, as carried out in this study, learners can possibly take more responsibility so as to attain their prospective roles in life by acting upon their language skills (Dörnyei, 2005; 2019). Additionally, if teachers are trained in such motivational programs in pre- and in-service training, they could also handle learners' strong perceptions of the teachers' sole effect on student performance by underscoring more adaptive achievement attributions such as *effort*, employment of effective *strategy*, or *study habits*. Teachers could design activities to relate learners' academic goals in language learning to life-long goals in order to involve them more in classroom activities and foster greater autonomy, as indicated in the present study. Investigations into a variety of AR and future-self activities, along with their effect on students' language motivation and achievement within a longitudinal scope of a study, could generate a fresh perspective yielding different results in the future.

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