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Styles and Style-Stretching:

How are They Related to Successful Learning?

Abstract

Although the learning style construct has aroused much interest over the years, questions remain regarding basic issues such as definition, the validity and/or reliability of various measurement instruments, and the relationship between learning style and successful learning. Furthermore, although maintaining stylistic flexibility is recommended by many authors, few studies have attempted to relate the style-stretching concept to successful learning. This study therefore attempted to address these questions. According to results, conducted among 106 Turkish university students, using an original instrument constructed using elements from established questionnaires, a small group of styles was significantly correlated with exam results, accounting for about a quarter of the variance (considered a large effect size in social science). In addition, higher-scoring students reported a more eclectic range of styles, suggesting more willingness to style-stretch, while lower-scoring students reported a more limited range. Pedagogical implications as well as areas for ongoing research are suggested.

Keywords: style instrumentation, style stretching, aural style, communicative style, environmental preference, ambiguity tolerance

Introduction

The learning style concept is intuitively appealing, since it has the potential to greatly enhance learning and to make learning more enjoyable and successful. It is a concept that acknowledges individual differences, rather than seeing all learners as similar. For teachers, it presents an opportunity to offer students methodologies and materials appropriate to individual learning style preferences. For learners, it allows them the freedom to learn in ways which are enjoyable and can help them to become the best that they are capable of.

Learning Style Definition

Learning style has been defined in many ways. Indeed, "contested definitions" (Peterson, Rayner and Armstrong, 2009, p.518) have been a major stumbling block on the road to progress in learning style research. One of the most influential and enduring definitions was by Reid (1995, p.viii), who described learning style as "an individual's habitual and preferred way(s) of absorbing, processing, and retaining new information and skills". As such, learning styles are usually expressed in adjectival terms (e.g. visual, communicative, analytical, etc.). This helps to distinguish the style concept from strategies, with which they are often confused. Strategies have been defined as activities chosen by learners for the purpose of learning (Author 1, 2008, 2013; Author and Oxford, 2014), and, because of their active nature, they are usually expressed as verbs, most commonly as gerunds (e.g. remembering, seeking, planning, etc.) or in first person form (e.g. I plan my time carefully, I try to maintain a positive attitude etc.). Learning style is also often confused with personality (e.g. Athola and O'Connor, 2014; Battistoni and Colladon, 2014) a broader concept used to define an individual's personal, emotional and/or behavioural

traits in a general way which is not confined to learning (Ehrman, 2008). And yet another concept with which learning style is often confused is that of cognitive style (e.g. Zhang, 2010). The difference, according to Dornyei (2005), is that cognitive style is the more general term relating to how individuals think and process information, whereas learning styles focus specifically on learning. These various concepts, however, may overlap. Someone with an extroverted personality, for instance, is likely to have a particular way of thinking (cognitive style), which may pre-dispose him or her to a communicative learning style with a preference for interacting with others, which, in turn, may influence him or her to favour social strategies by seeking conversation partners. In other words, these various characteristics tend to co-exist in a complex and dynamic state of interaction.

Learning Style Instruments

In order to measure learning style, many instruments have been developed. One of the earliest was the Learning Style Inventory by Dunn, Dunn, and Price (1975) which divided learning style into five domains of preference (Environmental, Emotional, Sociological, Physiological and Psychological). Also based on five areas of learner preference was Reid's (1987) Perceptual Learning Style Preference Questionnaire (PLSPQ), based on five modalities: Visual (learning by seeing), Auditory (learning by hearing), Tactile (learning by means of hands-on experience), Kinesthetic (learning by moving), and Individual versus group preference.

A quadrant model was used by a number of learning style surveys. These include the Learning Style Inventory (Kolb, 1976); the Style Delineator (Gregorc, 1979); the Learning Styles Questionnaire (Honey and Mumford, 1982); the Learning Style Questionnaire, used by Willing

(1987) in a survey of Australian immigrants; and the VARK (standing for visual, auditory, reading/writing and kinesthetic, Fleming and Mills, 1992).

Taking different approaches, Witkin (1962) developed the field dependent/field independent distinction to describe learners who are more or less able to distinguish detail from background information, an area which has attracted much research (e.g. Chapelle, 1988, 1995); Curry (1983) conceived of learning style as a metaphorical onion with multiple layers of preference, including instructional, environmental, information-processing and personality-based preferences; The Style Analysis Survey (Oxford, 1993) included preferences such as intuitive random versus concrete sequential, and closure oriented versus open; Ely (1995) focused on the ambiguity toleration aspect of learning style, an area perhaps first highlighted as an important factor in language learning by Naiman, Frohlich, Stern and Todesco (1978) in theır good language learner study in Canada; The Learning Style Survey (Cohen, Oxford and Chi, 2002), described learners according, for instance, to whether they were impulsive or reflective, global or particular, deductive or inductive; and The Learning Style Questionnaire (Ehrman and Leaver, 2003), operated between the two poles of ectasis (exercising conscious control) and synopsis (relying on subconscious processing). (For a more comprehensive description and discussion of these various instruments, see Author 1, 2012).

Previous Learning Style Research

Although the style concept initially seemed to hold great potential as a means of promoting successful learning, supporting research evidence has been elusive. Many of the studies have

failed to show a relationship between learning style and successful learning, while others have produced somewhat limited results leading to rather vague conclusions

In her original study using the Perceptual Learning Style Preference Questionnaire (PLSPQ), Reid (1987) surveyed 1,388 students of various language backgrounds in order to investigate their learning style preferences. She discovered a general preference for kinesthetic and tactile modalities and for individual rather than group learning. According to her results, however, learning style was not related to proficiency.

Using the Productivity Environmental Preference Survey (Dunn, Dunn and Price, 1991) with a sample of 100 American college students enrolled in French and Spanish courses at an American university, Bailey, Onwuegbuzie, and Daley (2000) found that the more successful students tended to prefer a more informal classroom environment, but they did not like a kinesthetic learning mode. Overall, however, these preferences were not strong, leading the authors to conclude that learning style could account for only a "modest proportion of variance in foreign language achievement" (p.126).

Kolb's (1985) Learning Style Inventory was used by Andreou, Andreou and Vlachos (2008) to undertake a study in order to explore the relationship between learning styles and performance on phonological, syntactic and semantic tasks in English. The participants included 452 undergraduate students at a Greek university. A divergent style (concrete experience with abstract conceptualization) was found to be significantly correlated with performance for phonology and semantics and an accommodative style (active experimentation with concrete experience) was correlated with scores on syntactic tasks. However, the significance level was relatively low ($p<.05$ in all cases), leading the authors to the rather guarded conclusion: "It cannot be assumed that learning styles determine L2 performance in every case" (p.672).

Chen (2009) investigated the relationship between grade level and learning style preference among 390 junior high school EFL students in Taiwan. Using the Perceptual Learning Style Preference Questionnaire (PLSPQ, Reid, 1987), Chen found a number of statistically significant relationships between grade level and kinesthetic, tactile and individual learning styles, suggesting the need for teachers to be aware of their students' learning style preferences.

Researching the relationship between learning style and L2 vocabulary acquisition, Tight (2010) investigated the learning style preferences of 128 native English speaking undergraduate learners of Spanish at an American university. Using a learning style survey which included visual, auditory, tactile/kinesthetic and mixed preferences, with a pre-test, post-test and delayed post-test design, Tight (2010, p.792) concluded that "learners of different style preferences are equally successful", leading him to recommend "instruction through multiple modalities".

Style-stretching

These somewhat indeterminate results notwithstanding, as Nel (2008) points out, every learner does have a style. Intuitively, furthermore, learning style is a factor which needs to be taken into account when trying to promote successful learning (e.g. Callender, 1995). If learners are to benefit from the learning opportunities to which they may be exposed, it is important that the styles in which they choose to learn are considered (e.g. Ehrman, 1996; Manolis, Burns, Assudani and Chinta, 2013). Although learning style has often been regarded as a relatively stable individual characteristic (e.g. Reinert, 1976; Richardson, 2011), increasingly the importance of retaining stylistic flexibility, often referred to as style stretching, has been and is being recognized in the literature (e.g. Tuan, 2011). According, for instance, to Little and Singleton (1990), learning styles are malleable, and can be adapted by experience and training. Cohen and Dörnyei (2002, p.176) recommend that "learners over time can be encouraged to

engage in ‘style stretching’ so as to incorporate approaches to learning they were resisting in the past”, and Dörnyei (2005, p.157) suggests that “students who can operate in a range of styles …..in a flexible manner are likely to become more effective learners”. Oxford (2011, p.40) declares: “although the learner might have some strong style tendencies, they are not set in stone”. Stylistic flexibility is also included by Wong and Nunan (2011) as one of the characteristics of effective learners, while “stretching their comfort zone through practice” is recommended by Cohen (2012, p.142). Style stretching is also recommended by Gregersen and MacIntyre (2014, p.174) as a way of coping when students “find themselves outside their comfort zones”.

The Study

Given that non-committal words and phrases such as “modest” and “cannot be assumed” continue to be used when summarizing the findings of learning style research, we have to conclude that the relationship between learning style and successful learning remains somewhat imprecise. Furthermore, although the importance of stylistic flexibility is well recognized, there are few studies which have attempted to match the style-stretching concept empirically to successful learning.

This study therefore set out to first of all establish a basic framework of learners’ stylistic preferences by means of an original questionnaire constructed from established surveys, and to correlate these preferences with scores on a university placement test designed to determine whether students can proceed directly to their chosen courses or whether they need to attend a preparation course. The questionnaire data were then analysed according to the responses provided by the highest and the lowest scoring students to see if any patterns of style preference could be identified and the relationship of these patterns to the test results.

The research questions for this study therefore were:

1. Is it possible to identify any general stylistic preferences which are related to successful learning (as measured in the case of this study by scores on a university entrance test)?
2. Is it possible to identify any patterns of stylistic flexibility (style-stretching) as displayed by more or less successful students?

Setting

This study was conducted in a well-established private university in Istanbul, Turkey. Since English is the medium of instruction at this university, it is important that entering students have a reasonable level of English to begin with, as otherwise it will be extremely difficult for them to complete their courses. The initial placement test therefore assumes great importance for these students.

Participants

The students in this study were taking the English proficiency exam, according to the results of which they would go on with their mainstream courses in the department or study in the preparatory program (often called "Prep. School"). The purpose of the survey was explained to these students both in English (the medium of instruction) and in Turkish (the language of the majority of the students) and it was made clear that the survey was not in any way connected with the test results and would have no impact on those results. Students were assured of confidentiality, that participation was voluntary, and provided with researchers' emails should they wish to ask questions. They were asked to sign that they consented to the results of the survey being used for research purposes and possible publication. Although by far the majority

of the students completed the survey, a few chose not to participate, and several more handed in incomplete forms which were discarded. Altogether, 106 usable questionnaires were handed in. Of these students, 80 were female and 26 were male. Ages ranged from late teenagers to early 20s. Although the majority of the students were Turkish, there were a few from elsewhere (e.g. Europe, Asia, the Middle East or Africa)

Data Collection and Analysis

The learning style data was collected at the same time as the proficiency exam, which included four different sections: listening, writing, reading and speaking. The style questionnaire was distributed when students had finished the proficiency exam.

Although, as noted above, there are numerous style inventories available, as Jones (2009, p.722-723) emphasizes, it is important to use an instrument which "produces valid and reliable results…..because if the instrument used to establish the learning style of the participants can be criticized for its reliability in predicting learning styles, then the results of the study overall are compromised". Furthermore, Jones (ibid. p.724) is nervous about "the unreliable nature of most instruments in this area". Metallidou and Plasidou (2008) and Manolis *et al.* (2013) express serious concerns about the validity of Kolb's (1976) Learning Style Inventory (LSI), while Kappe, Boekholt, den Rooyen and Van der Flier (2009) question the predictive validity of Honey and Mumford's (1982) Learning Styles Questionnaire (LSQ). According to Bailey *et al*. (2000) also, although they used Dunn *et al*.'s (1991) existing instrument (the Productivity Environmental Preference Survey), they concluded that, rather than using pre-constructed standardized instruments, a situation-specific instrument written to suit particular local characteristics may well be more appropriate.

Therefore, since an existing instrument which seemed to match the student profile and the context of the present study and which included a sufficiently comprehensive range of possible style preferences could not be found, it was decided to construct an original questionnaire from a selection of the style elements extracted from the literature. These included reading and writing styles included by, for instance, Fleming and Mills (1992) and Oxford (1993) in their inventories; aural (listening), oral (speaking), visual (seeing), kinesthetic (moving) and tactile (hands-on) styles (e.g. Fleming and Mills, 1992; Reid, 1987); rule-based, authority-based and people-oriented styles (Willing, 1987); co-operative/social/interactive style (e.g. Fleming and Mills, 1992; Oxford, 1993; Reid, 1987); environmental preferences (e.g. Curry, 1983; Dunn *et al*., 1975; Oxford, 1993); memory-based preferences (e.g. Cohen *et al*., 2002); ambiguity toleration (Ely, 1995; Oxford, 1993); field dependent/independent or global/holistic preferences (Cohen *et al*., 2002; Witkin, 1962); reflective and sequential styles (Cohen *et al*., 2002; Ehrman and Leaver, 2003; Oxford, 1993).

This new survey (the Inventory of Language Learning Styles or ILLS – see Appendix) was piloted in an exploratory study (Author 1, 2012) and found to have a reliability of .83 (Chronbach alpha), which is well above the minimum threshold of .70 (de Vaus, 1995; Oxford and Burry-Stock, 1995), suggesting that the questionnaire was reliable for the purpose of investigating students' style preferences. Following the pilot study, another item relating to the use of authentic materials suggested in comments made by the students was added to the inventory. The questionnaire items along with the style preferences to which they relate and the sources from which they were derived are set out in Table 1.

The questionnaire used a 5-point Likert scale from 5=strongly agree to 1=strongly disagree. Since Likert-scale data is non-parametric, medians were calculated for the ratings given

by students for the questionnaire items. The style ratings were also correlated (Spearman's rho) with the overall exam results, and Mann-Whitney U Test was used to calculate differences.

[Table 1]

The questionnaire was administered in English, since, although the majority language was Turkish, there were sufficient speakers of other languages among the participants (e.g. Farsi, Arabic, Russian, German, Kyrgyz, Swahili etc.) to make it impractical to cover all the linguistic groups present. It was therefore considered more equitable to administer the survey in the language of instruction (English), although every effort was made to keep the English as simple as possible within the limits of conveying the precise meaning. It was made clear to students that they were free to ask the supervisors if they had any questions or if there was anything they did not understand. This was explained in both English (the language of instruction) and Turkish (the first language of the majority of the students), and several of the respondents availed themselves of this opportunity, especially the meanings of some less common vocabulary (e.g. "manipulating", "environment", "unambiguous", "authentic"). In most of the cases, providing the Turkish equivalent was generally sufficient. In one or two cases where the student was not Turkish, they were allowed to use a dictionary (often compactly available on their mobile phones). Since the learning style survey was being done after the placement test had been handed in, allowing the use of the dictionary did not risk compromising the results of the test.

Results

Following analysis, results from the survey fell into three main groups: medians, correlations and differences:

Medians

The median ratings for the style items over the 106 students are set out in Table 2:

[Table 2]

As can be seen from Table 2:

- Only one item (No.3: I like to learn by speaking in the target language) received a median rating of 5, suggesting that these students were generally in strong agreement about the need for an oral style.
- Three other items (Nos 7: by manipulating e.g. models, cards etc; 16: in order; and 18: by means of authentic materials) received a neutral median rating of 3, suggesting that, overall, tactile, sequential and authentic styles did not polarize strong feelings in either direction.
- The remaining 14 items all received median ratings of 4, that is, in the "agree" range.

Correlations

As can be seen in Table 3, only 3 style items (4, 10 and 11) were significantly correlated (Spearman's rho) with test results:

[Table 3]

These results suggest that the high scoring students favored aural input and communication with others in a pleasant atmosphere in order to learn successfully. When these three items were combined into a group and correlated with examination results, there was a correlation co-efficient of 0.510 ($p<.01$), which accounts for 26% (0.510^2) of the variation in exam results.

Differences

In order to investigate differences in stylistic patterns between higher-scoring and lower-scoring students, the data were examined to identify those who obtained the top and the bottom scores.

It was found that 7 students scored 80% or more. These were matched with the 7 lowest scoring students, who gained 24% or less.

[Table 4]

When the ratings of the seven top-scoring students were compared with those of the seven bottom-scoring students, some interesting differences became evident. According to these results, the top-scoring students were very eclectic in their style preferences, giving a maximum rating of 5 to 35 of the possible 126 (18 x 7) items (=28%). At the other end of the scale, there were no 1s, suggesting that these high-scoring students were willing to employ a wide range of styles and did not emphatically reject (strongly disagree with) any of them

The bottom-scoring students, on the other hand, gave a total of only 18 style items a rating of 5 (=14%), but six items were rated 1 (4%) suggesting that lower-scoring students are much more limited in their willingness to adopt a variety of styles. These results are set out in Table 4.

Significant differences (Mann-Whitney U, $p<.05$) between the group of seven top-scoring (80% or more) students and the group of seven lowest-scoring (24% or less) students were discovered for items 4, 11, and 13, as in Table 5.

[Table 5]

Discussion

Although other studies (e.g. Andreou *et al*.; 2008; Bailey *et al*., 2000; Reid, 1987; Tight, 2010) have shown little or no correlation between learning style and successful learning, the results of this study indicate that there was a significant relationship. The highest overall rating (median=5) went to the oral style preference (I like to learn by speaking in the target language – Item 3),

while the lowest level of agreement (median=3) was for tactile (Item 7), sequential (Item 16) and authentic (Item 18) preferences. In other words, the majority of these students liked to speak, but they did not like hands-on activities, doing things in order or using realia.

More important than the medians, which only indicate the central tendency, according to the correlations, the most successful students (i.e. those who scored well on the English-based university placement test) liked to learn by hearing the target language (aural style - Item 4) and interacting with others (communicative style – Item 10) in a pleasant environment (environmental preference – Item 11) (for all three items $p<.01$). The aural and the environmental preferences (Items 4 and 11) also showed significant differences ($p<.05$) between the highest-scoring group of students (80% and higher) and the lowest scoring group of students (24% and lower). The three significantly correlated items together, (Items 4, 10 and 11) accounted for slightly more than a quarter ($r=0.510$, $p<.01$, which, when squared equals 26%) of the variance in exam results. Although this leaves 74% of the variance unaccounted for, when one considers the vast number of other possible variables which might possibly impact on examination success (including situational, target and individual factors), a factor which accounts for as much as a quarter of the variance cannot be dismissed as inconsequential. In terms of effect size, according to Cohen (1988) anything over $r=0.5$ can be considered large in social science research. From this we might conclude that learning style was a significant and important factor relating to examination success for these students.

In addition, there was a significant difference for Item 13 ($p=.032$, Mann-Whitney U), with the lower-scoring students showing a significantly lower tolerance for ambiguity. Intolerance of ambiguity has long been recognized in psychology and is described by Norton (1975, p.29) as “a

tendency to perceive or interpret information marked by vague, incomplete, fragmented, multiple, probable, unstructured, uncertain, inconsistent, contrary, contradictory or unclear meanings as actual or potential sources of psychological discomfort or threat". The concept was, perhaps, first highlighted as a factor affecting language learning by Naiman *et al*. (1978) in their good language learner study among adults and schoolchildren in Canada. They came to a number of important conclusions, including the idea that good learners are able to cope with a degree of uncertainty. It therefore follows, as Ely (1995) puts it, that "if a student experiences a feeling of 'threat' or 'discomfort' when confronted with linguistic uncertainty and is less inclined to take risks, ESL learning may be seriously hampered". In the light of these comments, it is understandable that the lower-scoring students in this study preferred a clear and unambiguous style of learning, while the higher-scoring students were more ambiguity tolerant.

Although many authors have stressed the importance of stylistic flexibility or "style-stretching" (e.g. Cohen, 2012; Cohen and Dörnyei, 2002; Dörnyei, 2005; Gregersen and MacIntyre, 2014; Little and Singleton, 1990; Oxford, 2011; Wong and Nunan, 2011), the relationship between style-stretching and successful learning has remained unclear and under-researched. The current study, however, by comparing the top-scoring students (those who obtained 80% or more in the qualifying exam, N=7) with the bottom-scoring students (those who scored 24% or less, N=7) was able to show some interesting differences in the way the two groups of students responded to the style questionnaire. In particular, a very interesting finding which emerged from the data analysis was that the more successful students were much more stylistically eclectic than the lower achievers. In fact, the high achievers expressed strong agreement with the style statements (rating=5) almost twice as often as the low achievers (35

times to 18). On the other hand, the low achievers expressed strong disagreement six times (rating=1), while the high achievers did not register any ratings at this level. From these results we might conclude that more successful students were more willing than less successful students to try out a range of different styles, to style-stretch, and to remain flexible.

Implications for the Teaching/Learning Situation

Although the findings of significant correlations between style preferences and successful learning as indicated by exam scores on a placement test at a Turkish university are interesting, care should be taken when trying to generalize these findings to other teaching and learning situations. Although the study adds support to the idea that style is an important factor in successful learning, it may well be that the exact mixture of styles which will lead to success for particular learners, studying for a specific target in any given situation may vary considerably, since "different groups of students will vary in their learning style" (Ellis, 2008, p.669). This suggests that the optimal stylistic profile of every situation needs to be assessed on a case-by-case basis. It may well be that even within a given institution (such as the university where the current study was carried out) not all classes will have the same stylistic preferences. And, of course, even within a class, students will not be identical either. This is a matter for the teacher's professional judgment, perhaps aided by a questionnaire such as the Inventory of Language Learning Styles (ILLS) which can be administered to the class and subsequently used to stimulate discussion among students and to inform teacher decision-making.

This would seem to suggest that, although style may be an important factor in successful learning, there is no one-size-fits-all learning style that can lead to success for all individuals in every context, working for every goal. This being the case, students should be allowed some

degree of individual freedom regarding the style they prefer to use (Author 1, 2012). Teachers, therefore, should try to accommodate stylistic variety when planning and conducting their lessons to allow learners to employ a learning style that suits their preferences and is personally enjoyable for the individual (e.g. Kawai, 2010). As Zhou (2011) points out, "How much a student can learn is also determined by the compatibility of the student's learning styles and the teacher's teaching styles". According to Andreou *et al*. (2008), "teachers should strive for a balanced teaching style that does not excessively favour any one learning style – or rather, one that tries to accommodate multiple learning styles." Such an environment will empower students "to equitably develop their individual learning styles" (Kinsella, 1995, p.193).

Nevertheless, although it may be important for teachers to accommodate various learning styles within their classrooms, they should also be aware of the benefits of encouraging students to move beyond rigid ideas of their own stylistic preferences and to try new ways of doing things which may, in fact, work better for them than the styles they have adopted in the past. As Cohen and Dornyei (2002, p.176) suggest, teachers "can modify the learning tasks they use in their classes in a way which may bring the best out of particular learners with particular learning style preferences. It is also possible that learners over time can be encouraged to engage in 'style stretching' so as to incorporate approaches to learning they were resisting in the past". Wong and Nunan (2011, p.154) also point out the close relationship between teaching style and learning style, and they suggest "learners are more likely to 'stretch' their own learning style and develop greater flexibility as learners if teachers 'stretch' their own teaching style and develop greater flexibility as teachers. [This] will help teachers cater to the different learner types that will almost certainly exist in their classrooms." Furthermore, as Gregersen and MacIntyre (2014, p.174) argue, "research shows that style matching has benefits, but sometimes style stretching is

exactly what language learners need to equip them for future struggles, prepare them for those moments when they find themselves outside their comfort zones and build their confidence to stretch their wings."

Directions for Further Research

This study has added some interesting insights to the questions surrounding the issue of learning style, and there are a number of ways in which the study could be extended by future researchers:

1. It would be useful to conduct similar studies in a wider range of contexts with different groups of learners studying for different purposes
2. Each of the style items could be investigated in more depth
3. Qualitative techniques such as interviews or journals could be used for triangulation
4. A study taking a longitudinal approach with a view to investigating how any changes relate to successful learning outcomes would also be interesting
5. Learning style could be investigated in relation to other important factors, such as personality, strategies, age, gender, culture, autonomy, identity, motivation, etc.
6. Although there is wide agreement on the importance of the relationship between learning and teaching style, the exact nature of this relationship remains under-researched
7. This study has uncovered some interesting evidence in favour of style-stretching, but much more detailed research remains to be done.

Conclusion

The learning style concept has been defined in many ways over the years, but, Reid's (1995) definition in terms of learners' preferred ways of learning remains influential. In addition, over the years, there have been many different attempts to survey learning styles. Consensus on

appropriate instruments, however, remains elusive, and contextual differences make it difficult to determine the most suitable instrument for a particular environment and the given participants involved. As a result, for the purposes of the current study, it was decided to construct a custom-made instrument based on items derived from established surveys.

According to the results of this study, involving 106 learners sitting an exam in order to enter a Turkish university, a small group of learning styles did correlate significantly with exam results, accounting for about a quarter of the variance in these results. In the case of these learners, the more successful learners favored an aural, interactive style in a pleasant environment, and they were also more tolerant of ambiguity than the less successful learners. Nevertheless, we need to remember that just as individual learners are not the same as each other, groups of learners also have salient characteristics which are not necessarily identical. We cannot, therefore assume that, just because the group in this study reported an overall preference for an aural, interactive style in a pleasant environment, this finding can be automatically generalized to all groups of learners. Learning style is a characteristic which needs to be assessed on a group by group basis and teaching styles and practices need to be adjusted accordingly.

Although learning style has been viewed as a relatively stable individual characteristic, many writers have emphasized the need for learners to remain flexible as far as stylistic preferences are concerned in order that they may be able to adapt to the conditions of the particular learning environment and to derive maximum benefit from it by means of what has been called style-stretching. The results of this study suggest that the most successful students in terms of the exam results were very eclectic in their style preferences and willing to consider a wide range of style options.

The results of this study indicate that there is a demonstrable relationship between learning style and successful learning, although care is recommended when attempting to generalize the specific findings from this study to other learners and contexts. Furthermore, the results show that the most successful learners are willing to style-stretch. Nevertheless, many questions relating to the style concept remain, as noted in the "Directions for further research" section, and it is to be hoped that ongoing investigative efforts may provide some illuminating answers which will contribute to more effective learning.

Appendix: Inventory of language learning styles (ILLS)

Please rate each of the following learning style preferences according to the scale:

5 = strongly agree; 4 = agree; 3 = neutral; 2 = disagree; 1 = strongly disagree.

I like to learn			
Item	Style	Rating	Comment
1	by reading		(literary style) (Fleming & Mills, 1992; Oxford, 1993)
2	by writing things down		(graphic style) (Fleming & Mills, 1992: Oxford, 1993)
3	by speaking in the target language		(oral style) (Reid, 1987; Fleming & Mills, 1992)
4	by hearing the target language spoken		(aural style) (Reid, 1987; Fleming & Mills, 1992)
5	by seeing, e.g., diagrams, pictures etc		(visual style) (Reid, 1987; Fleming & Mills, 1992)
6	by moving around		(kinaesthetic style) (Reid, 1987; Fleming & Mills, 1992)
7	by manipulating, e.g., models, cards etc		(tactile style) (Reid, 1987; Fleming & Mills, 1992)
8	by learning the rules		(rule-based style) (Willing, 1987)
9	by being corrected		(authority-based style) (Willing, 1987)
10	with others		(co-operative/social/interactive style) (Reid, 1987; Willing, 1987; Oxford, 1993)
11	in an environment that I find pleasant		(environmental preferences) (Curry, 1983 ; Dunn *et al*. 1975 ; Oxford, 1993)
12	by memorizing		(memory-dependent style) (Cohen *et al*., 2002)
13	by having what I need to learn clear and unambiguous		(ambiguity toleration) (Ely, 1995; Oxford, 1993)
14	by concentrating on details		(field in/dependent/global/holistic) (Cohen *et al*., 2002; Witkin, 1962)
15	by thinking before speaking or writing		(reflective style) (Cohen *et al*., 2002; Ehrman & Leaver, 2003)
16	in order		(sequential) (Ehrman & Leaver, 2003; Oxford, 1993)
17	by playing games		(people oriented) (Willing, 1987)
18	by means of authentic materials		(suggested by comments made by students in the pilot study)
19	Do you have any other preferences regarding how you learn?		

NB: For anyone planning to use this survey in their own work, the notes included in the comments column are for researcher reference only and should be removed before being administered to students.

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Tables

Table 1
Questionnaire items, with related style preferences and sources

Item	Style/preference	Source
1 and 2	Reading and writing styles	Fleming and Mills, 1992; Oxford, 1993
3 to 7	Aural, oral, visual, kinesthetic and tactile styles	Fleming and Mills, ibid.; Reid, 1987
8, 9 and 17	rule-based, authority-based and people-oriented styles	Willing, 1987
10	co-operative/social/interactive styles	Fleming and Mills, ibid.; Oxford, ibid; Reid, ibid.
11	environmental preferences	Curry, 1983; Dunn *et al*., 1975; Oxford, ibid.
12	memory-dependent preferences	Cohen *et al*., 2002
13	ability to tolerate ambiguity	Ely, 1995; Oxford, 1993
14	field-in/dependent/global/holistic preferences	Cohen *et al*., ibid.; Witkin, 1962
15 and 16	reflective and sequential styles	Cohen *et al*., ibid; Ehrman and Leaver, 2003; Oxford, ibid
18	preference for authentic materials	Added as a result of comments made by students in the exploratory study

Table 2
Style item median ratings (N=106)

	I like to learn	Median rating
1	by reading	4
2	by writing things down	4
3	by speaking in the target language	5
4	by hearing the target language spoken	4
5	by seeing, e.g., diagrams, pictures etc.	4
6	by moving around	4
7	by manipulating, e.g., models, cards etc.	3
8	by learning the rules	4
9	by being corrected	4
10	with others	4
11	in an environment that I find pleasant	4
12	by memorizing	4

13	by having what I need to learn clear and unambiguous	4
14	by concentrating on details	4
15	by thinking before speaking or writing	4
16	in order	3
17	by playing games	4
18	by means of authentic materials	3

Table 3

Style items significantly correlated (Spearman's rho) with test results

Item	Content	R
4	By hearing the language spoken	.346**, $p<.01$
10	By interacting with others	.348**, $p<.01$
11	In a pleasant environment	.347**, $p<.01$

Table 4

Comparison of style preferences of highest and lowest scoring groups of students (N=7 in each group)

	Top-scoring students (N=7)							Bottom-scoring students (N=7)						
Student No	62	79	36	49	48	75	34	94	83	91	78	20	72	77
Exam Score	93	87	87	86	82	80	80	24	24	22	22	21	18	18
Gender	F	F	F	F	M	F	M	F	F	F	F	M	F	F
1	4	4	4	3	5	4	5	4	4	2	3	4	3	3
2	5	5	5	4	4	4	4	4	5	5	5	3	3	4
3	5	3	5	4	2	5	5	4	5	1	5	4	4	4
4	5	5	4	5	4	5	4	4	4	1	4	1	4	3
5	3	5	4	2	4	3	3	4	5	5	3	2	3	5
6	5	2	3	2	3	2	4	2	3	5	4	4	5	4
7	3	5	4	2	3	3	3	3	5	5	3	3	4	4
8	4	3	4	4	3	4	3	3	4	2	3	3	3	4
9	5	3	4	4	4	5	4	3	5	3	2	3	4	3
10	5	3	5	3	3	5	5	3	3	2	3	2	4	3
11	5	4	5	4	4	4	5	3	4	3	3	1	4	3
12	5	5	5	3	2	3	2	4	5	2	3	1	5	3
13	4	3	5	3	4	5	3	3	4	3	5	3	3	3
14	5	4	4	4	4	5	3	4	3	3	3	4	4	3
15	4	4	5	4	4	4	4	4	5	3	3	4	4	3
16	3	4	4	3	3	4	3	2	4	3	3	3	3	3
17	2	3	5	2	5	5	4	3	5	5	4	2	4	4
18	3	4	5	3	3	4	4	3	2	5	3	1	4	3
	Total number of 5s = 35 Total number of 1s = 0							Total number of 5s = 18 Total number of 1s = 6						

Table 5

Style items showing a significant difference (Mann-Whitney U) in levels of agreement between high-scoring and low scoring students

Item	Content	Sig
4	By hearing the language spoken	.032
11	In a pleasant environment	.016
13	By having what I need to learn clear and unambiguous	.032