FROM LINES TO MINDS: EXPLORING THE RELATIONSHIP BETWEEN ATTACHMENT, MENTALIZATION AND CHILDREN'S DRAWINGS

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From Lines To Minds: Exploring The Relationship Between Attachment, Mentalization And Children's Drawings

Çizgilerden Zihinlere: Bağlanma, Zihinselleştirme ve Çocuk Çizimleri Arasındaki İlişkinin İncelenmesi

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ABSTRACT

Considering it is easier to reflect their inner worlds with drawings rather than words, comprehension of children's attachment quality and mentalization capacity based on their creative language is valuable despite being overlooked in research. The relationships between children's House-Tree-Person (H-T-P) drawings and attachment security, attachment stles and mentalization capacity were explored in the current study with 85 participants aged 6-12. Attachment security and prototypes were assessed by ASCT whereas mentalization capacity was assessed by application of the coding system for Mental State Talk (CS-MST) to the narratives within ASCT. To evaluate H-T-P drawings quantitatively, a novel scoring manual with seven dimensions (line quality, size, location, level of detail, bizare items and negative facial expressions) was developed. Along with testing the manual's reliability, in the present study, it was hypothesized that attachment security and mentalization capacity would predict H-T-P scores, and, relatedly there would be differences regarding H-T-P scores of children with different attachment prototypes. Age, gender, intelligence, and problematic behaviors were controlled in analyses. Although the results were not supportive of attachment security and mentalization's predictive power, insecure attachment was linked to more simplified drawings while higher MST was linked to more detailed drawings. Moreover, lower MST was also linked with smaller figure size. It was lastly found that anxiously attached children had more details in their drawings compared to others. Overall, H-T-P scores were shown to be reliable and valid indicators of attachment and mentalization. The findings are discussed elaborately, with a focus on clinical implications and limitations.

Keywords: House-Tree-Person Test; Attachment; Mentalization; Mental State Talk; Projective Tests

ÖZ

İç dünyalarını kelimelerdense çizimlerle çok daha kolay ifade edebildikleri düşünüldüğünde, çocukların bağlanma özellikleri ve mentalizasyon kapasitelerinin kendi kullandıkları yaratıcı dil üzerinden anlaşılabilmesi oldukça değerli, araştırma açısından da bir o kadar da gözden kaçırılmış bir noktadır. Çocukların bağlanma güvenlikleri, bağlanma stilleri, mentalizasyon kapasiteleri ve ev-ağaç-insan (H-T-P) çizimleri arasındaki ilişkilerin incelendiği bu çalışmada, 6-12 yaşlarındaki 85 çocuktan veri toplanmıştır. Bağlanma güvenliği ve stili bir hikaye tamamlama testi (ASCT) ile, mentalizasyon Mental State Talk (MST) kodlama sisteminin ASCT dahilindeki hikayelere uygulanması ile ölçülmüştür. Çocukların H-T-P çizimlerini nicel bir açıdan değerlendirebilmek amacıyla yedi boyuttan (çizgi kalitesi, boyut, konum, detay seviyesi, tuhaf elementler ve olumsuz yüz ifadeleri) oluşan özgün bir puanlama sistemi geliştirilmiştir. Bu sistemin geçerliliğini ölçmenin yanı sıra, bağlanma güvenliği ve mentalizasyonun H-T-P skorlarını yordaması ve, bağlantılı olarak, farklı bağlanma stilleri arasında H-T-P skorları açısından bir fark bulunması beklenmiştir. Yapılan analizlerde yaş, cinsiyet, bilişsel zeka ve problematik davranışlar kontrol edilmiştir. Sonuçlar toplam bağlanma ve mentalizasyon skorlarının yordayıcı gücünü destekleyen yönde olmasa da yapılan analizlerde güvensiz bağlanma daha basitleştirilmiş çizimlerle, daha yüksek MST skorları ise daha detaylandırılmış çizimlerle ilişkili bulunmuştur. Ayrıca, daha küçük çizim yapan çocukların MST skorlarının daha düşük olduğu gözlemlenmiştir. Son olarak, kaygılı bağlanan çocukların çizimlerinde kaygılı bağlanmayanlara göre daha fazla detay bulunduğu görülmüştür. Genel olarak, H-T-P çizim skorları geçerli ve güvenli bulunmuştur. Bulgular detaylıca tartışılmış, klinik açıdan önemleri ve limitasyonları anlatılmıştır.

Anahtar Kelimeler: Ev-Ağaç-İnsan Testi; Bağlanma; Zihinselleştirme; Zihin Durumu Konuşması; Projektif Testler

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INTRODUCTION

Every art work tells us something about its artist, and research on art and the psyche has been ongoing in the psychoanalytic literature for a long time. Art activities provide individuals with safe and enjoyable spaces where they can express themselves freely. Individuals' feelings and experiences that they might otherwise struggle to bring to the surface can be revealed in the safe and ambiguous artistic space.

Children largely communicate through play, and art activities such as drawing allows them to convey their thoughts and feelings in a non-threatening manner, without the need for verbal expression. Therefore, drawing tests are widely used in clinical settings as both assessment and therapeutic tools, especially with children whose self-expression capacity is still developing. The House-Tree-Person Test (Buck, 1948; Buck & Hammer, 1969) is such a tool to gain deeper insights into a child's inner world. It is assumed that individuals project various aspects of themselves in the drawings of these familiar but ambiguous objects: the house symbolizes home and familial relationships, the tree symbolizes the self in relation to the environment and finally, the person is a self-portrait. The H-T-P test is used very commonly in the psychological assessment of children. Therefore, empirical research on the use and interpretation of this test, although not many in Turkiye, might prove to be beneficial.

Several studies drawing on the hypothetical background of the H-T-P characteristics have been conducted in the last decades. These studies mainly focus on proving the relationship between certain drawing characteristics found in the H-T-P drawings and individuals' personality and psychopathology. It was found that H-T-P drawing characteristics such as size or proportions could predict the presence of mental health issues like schizophrenia, anxiety, and depression; or certain personality traits like openness and neuroticism. However, attachment security, a significant aspect of personality and mental health, is yet to be studied quantitatively in relation to H-T-P drawings.

Attachment theory (Ainsworth & Bowlby, 1991) suggests that the quality of our primary relationships, especially with our primary caregiver, becomes internal working models and shapes our expectations for future relationships. If infants are securely attached to

their primary caregivers, they become able to form mutual, secure relationships when they grow up. Studies examining other drawing tasks such as the Family Drawing Test and the Bird's Nest Drawing Test reveal that certain aspects in drawings are indeed correlated with attachment security (Kaplan & Main, 1985; Kaiser, 1996). Drawing characteristics such as negative facial expressions, lack of detail, distance between family members, incomplete and disproportionate figures were found to be indicative of insecure attachment. Family drawings include the drawing of family bonds by necessity; therefore, they are likely to reflect an individual's relationship with their caregivers. However, the H-T-P test reveals more than familial relationships. These drawings are believed to be symbolizations sense of self, development, ego functions and fixations on past or the future. Therefore, it is intriguing to see how attachment would be reflected in these drawings specifically.

Recently, the effects of our primary relationships on our psychological health have been investigated in terms of mentalization capacity. Mentalization is the ability to be curious about, imagine and understand mental states (Fonagy et al., 2002). Basically, it is the capacity to make meaning of our sensations, understand social cues and effectively reflect what is in our minds. Since drawings are also considered to be reflections of our inner world, mentalization capacity may also have an effect on drawing characteristics. In a recent study, both attachment security and mentalization capacity were found to be significantly related to the drawing quality of children's family and caregiver drawings (Rosen et al., 2023). Therefore, another goal of this research is to find out if there is a meaningful relationship between mentalization and children's H-T-P drawing characteristics.

Overall, the current study is expected to be a valuable addition to literature, since research on the H-T-P drawing test with Turkish samples are limited. Moreover, due to the absence of a valid and comprehensive scoring system for the use of H-T-P with children, a novel H-T-P scoring manual will be developed and analyzed in terms of its validity and reliability. It is believed that the results of this research will facilitate the clinical assessment of children and enrich our understanding of their inner world.

LITERATURE REVIEW

2.1. Theoretical Background

2.1.1. History of Projective Testing

All creative work, even the simplest one, bears the stamp of the mind of its creator. Every experience of artistic creation becomes a unique chance of self-expression; one which potentially exceeds the depth and richness of typical communication (Machover, 1949). Just as art historians analyze how an artist's personality, the era they lived in, and their personal experiences shape their artistic style; psychologists examine how artistic creations unveil the psyche, starting from the moment one is capable of creating.

The making and interpretation of artworks have been used as projective tools in clinical psychology for ages. However, the scope of projective tests is not limited to artistic creations alone. Projective testing initially started with a Word Association Test by Carl Jung (1910). In his study, Jung presented 100 seemingly random words -chosen and arranged in a deliberate manner- to individuals who showed signs of emotional disturbance, and another group of individuals who did not show any signs of emotional disturbance. Individuals were asked to say the first word that came to their minds when hearing a word. He reported differences in reaction times and the quality of the answers between individuals with and without emotional disturbance.

Drawing from Jung's work, Hermann Rorschach developed the Rorschach Inkblot Method (Rorschach, 1921/1942). In this test, individuals are shown a series of symmetrical shapes made of ink blots, some black-and-white and some colored. Individuals are simply asked to tell what they see in each shape. It is believed that the number of answers given, reaction times, and what is seen in each shape in terms of form, movement and color are revealing of one's personality and mental structure. As one of the most prominently used projective techniques, the Rorschach has been carefully

standardized into a reliable personality assessment tool with many valid corollaries (Weiner, 1999).

Another widely used projective test is the Thematic Apperception Test developed by Henry Murray (1943). In this test, thirty-two ambiguous yet provocative pictures are shown to individuals, who are then asked to tell a story about each picture. These pictures involve males, females, or both, on different occasions around themes like success, relationships, and aggression. Some of the pictures include more abstract shapes, and one of the picture cards shown is completely blank. The content and the course of events in each story, and even one's capacity to form a complete story; reveal one's relationship to the themes presented in each picture.

The projective power of the stimuli used in these tests stems from their seemingly ambiguous yet suggestive nature, and from one's capacity to fill the gaps in these stimuli according to their own inner reality. This aspect of completing outer reality with our inner reality makes projective assessments a transitional experience, an "intermediate area between the subjective and that which is objectively perceived", where individuals can safely and playfully explore both realities (Willock, 1992; Winnicott, 1953, in Furman & Levy, 2003, p. 276).

2.1.2. Drawing Tests

Similarly, artistic creation also provides the individual with a transitional space through symbolism. Visual arts, psychodrama, music, and other artistic methods are commonly used as transformative tools in therapeutic contexts; moreover, these activities also help us understand individuals' level of functioning, underlying problems, and strengths (Betts, 2006). Artistic activities might prove to be most useful when working with children, who have limited means of verbal self-expression compared to adults. "Long before youngsters can put their feelings and thoughts into words, they can express both conscious and unconscious attitudes, wishes, and concerns in drawings. Drawing is a non-verbal language, a means of communication." (Koppitz, 1968, pp. 283-284). Apart from being

practical and fast, children enjoy creating artworks, which makes artistic activities, such as drawing tasks, more indirect and therefore less threatening to children as a clinical assessment tool (Tielsch & Allen, 2005). Many drawing tests have since been developed and used in order to explore various aspects of children's inner world.

In the early 19th century, however, assessment of children served mainly educational purposes. Standardized and brief intelligence tests were being developed to measure cognitive skills and determine the educational needs of children (Boake, 2002). Amid this popularity of intelligence testing, Florence L. Goodenough (1886-1959), a researcher of Psychology and Art Education, developed the Draw-A-Man Test (DAM) to assess children's cognitive maturity from their drawings. (Goodenough, 1926). In this test, children were simply asked to draw a man on a sheet of paper. Goodenough studied these drawings in order to find out in which objectively measurable ways they changed through age, and therefore cognitive ability. A systematic scoring system was developed on the grounds that children who included more realistic details and proportions in their drawings showed higher conceptual ability.

The DAM was believed to be very beneficial for the field of developmental testing since this non-verbal task could be easily administered to children from various backgrounds and conditions (Goodenough, 1926). Goodenough also stated that the image of a man would be universal and familiar to every child (Goodenough, 1926). The revised version of this test, the Draw-A-Person Test (DAPT), is still being used as an assessment tool for intelligence and school readiness (Harris & Roberts, 1974). However, over the years, there have been many studies disconfirming its validity (Motta et al., 1993). Years of administration and observation of the DAPT revealed that even though two drawings acquired the same ratings, there would still be a striking number of unexplained differences between them (Machover, 1949).

Indeed, drawings of children are affected by more than just intelligence. For instance, as children grow older, their drawings tend to become more detailed, proportionate and realistic (Yavuzer, 2016). In line with Piaget's (1962) stages of cognitive development, even after children develop adequate fine motor capacity to use a pencil, they struggle for some time to take others' perspectives into account and depict them on paper. Therefore,

between the ages of 4-7, their drawings usually reflect their perspective alone, which results in more distorted drawings in terms of realistic details, transparency, proportion and size. Nevertheless, their drawings reflect their thoughts and emotions (Yavuzer, 2016; Akkapulu, 2010). After the age of 7, children are expected to acquire a more realistic drawing style. For example, they are expected to include a nose and a neck when drawing a human or ground all figures on one single line (Yavuzer, 2016).

Children's drawing characteristics and preferences are also affected by their gender. For example, boys were found to make more unrealistic and aggressive drawings, while girls were more preoccupied with aesthetic expression (Flannery & Watson, 1995). In another study, girls seemed to be more interested in depicting relationships while boys tended to draw solitary figures (Silver, 1993). These preferences might lead to gender-based differences in detail levels, proportions and violent content found in their drawings (Yavuzer, 2016).

Shortly, it is seen that children's drawing characteristics are affected by a large number of variables. Another such variable is the child's unconscious mental representations, which is why drawings are also used as projective tests.

2.2. The House-Tree-Person Test

2.2.1. Development and Initial Studies

One day in 1937, John N. Buck (1906-1983), a clinical psychologist who occasionally worked with reserved and withdrawn children, offered a client who refused to answer any of his questions, to make a drawing. He surprisingly realized that not only did his client's drawing answer all his questions, but his client also started to give verbal answers more easily when she was occupied with drawing (Buck & Hammer, 1969). This and many similar observations inspired him to develop one of the most used projective drawing tests for children and adults: The House-Tree-Person Test (H-T-P).

Originally developed by Buck (1948) and later revised by Buck & Hammer (1969), the H-T-P Test is one of many projective drawing tests that help clinicians to "scratch the surface" (Buck, 1948, p. 155). Similar to the DAPT, The H-T-P Test comprises the drawing of a house, a tree, and a person. These items were chosen mainly because when they were asked to make a spontaneous drawing, children mostly tended to draw these three items. There have been several changes in the instructions and interpretations of The H-T-P. Originally, Buck (1948) asked adult participants to draw a house, a tree, and a person on separate sheets of paper. After each drawing was completed, he asked the Post-Drawing Interrogation (P-D-I) questions. Buck believed that making these drawings would elicit strong emotional reactions since these seemingly non-threatening items were strong representations of the self and the environment. Individuals' emotional responses and associations to the drawings were therefore a crucial part of this assessment.

From these two phases of assessment, a quantitative and a qualitative scoring system was developed. Elements of the drawings such as Details, Proportions, and Perspective were scored quantitatively for each drawing, which, according to Buck (1948) measured one's intellectual maturity. Answers to the P-D-I were scored qualitatively in order to make sense of one's personality, i.e., psychosexual development, interpersonal relationships, basic needs, and conflicts. In later revisions, Buck abandoned his desire to make the H-T-P an intelligence scale and focused on the projective use of these drawings (Buck & Hammer, 1969). Moreover, a fourth drawing was added to the test. Individuals were now asked to draw two persons, one of each gender.

Although initial standardization and validation studies were conducted with adolescents and adults, Buck (1948) stated that the H-T-P test could also be administered to children. Jolles and Beck (Jolles, 1952a; Jolles, 1952b; Jolles & Beck 1953a; Jolles & Beck 1953b) conducted initial validation studies with children and found that Buck's (1948) conclusions regarding emotional and psychosexual disturbance could be replicated with 5-12-year-olds as well. However, these initial validation studies must be regarded with caution due to their limited scope and their methodology which could be named "questionable" at best. A compilation of these initial interpretations and scoring criteria can be found in Jolles's interpretative catalogue (Jolles, 1971).

2.2.2. Interpretation of the House-Tree-Person Test

In the next sections, initial symbolic interpretations of general drawing qualities and interpretations regarding the house, the tree, and the person will be briefly explained.

2.2.2.1. General Qualities

If one wants to interpret children's drawings, perhaps one should, first and foremost, observe the child's relationship with the paper and the pencil. General characteristics present in all drawings, which could also be termed as an individual's drawing style or drawing quality, may be even more significant than characteristics of the house, the tree, and the person separately. How individuals fit themselves into a piece of paper, the impression a drawing creates on the individual, the force and decisiveness with which lines are drawn, and how close one gets to realistic details are all noteworthy in terms of one's personality (Machover, 1949).

According to Buck and Hammer (1969), if an individual draws with a certain tendency, for example, to draw larger than usual, this can be interpreted in two ways: (1) As a real-life tendency to feel this way or (2) As a compensation for feeling the opposite way. One's personal history might reveal which one is true for each individual when in most people, both can be true at the same time. As in the example of drawing large figures, one might be interpreted as having grandiose and aggressive tendencies in real life or feeling inferior or insecure, which is compensated by drawing a disguising large figure (Buck & Hammer, 1969, p. 2).

The space one chooses to occupy on a blank page, i.e., drawing size, is strongly related to the space one occupies, or maybe wishes to occupy in real life. A larger drawing size might be related to possible hyperactive, expressive tendencies while a smaller drawing size might reveal depressive and withdrawal tendencies (Alschuler & Hattwick, 1947). It has been supported by empirical studies that problems about self-perception are reflected in the size of the house, the tree, and the person relative to the paper. For example,

according to Kwark and Lee (2010), trees drawn very small are related to insecurity. Similarly, a person drawn very small may indicate low mental energy and self-awareness (Meehan, 1968). In addition, larger person size was found to have a positive relationship with self-esteem (Groth-Marnat & Roberts, 1998). The size of the house, on the other hand, might be reflecting to familial issues such as low intimacy (Chen, 2015).

Considering that the figure represents the self and the paper the environment, the placement of a figure on paper might be related to one's relationship and stance in his/her environment (Machover, 1949). Some individuals might choose to place the figure at the very center of the page while others place it near the edges, almost as if their figure is escaping from the center or clinging to the side. The former might indicate secure feelings in an individual, while the latter might be related to feelings of dependency, need for support, and insecurity (Buck, 1948; Burns & Kaufman, 1972). Empirical findings also revealed that the location of the house, the tree and the person on the paper; more specifically, the centrality of the figures, might have significant implications for mental health issues, such as depression and impusivity (Li et al., 2011; Lee, 2019).

Just like the size of the whole figure, the presence and proportion of certain parts of the figure might be significant. Individuals might over or underemphasize certain parts of a figure, e.g., a person's eyes, by drawing them disproportionately larger or smaller, or choosing to omit them in the first place. This emphasis might reveal that the individual has a preoccupation with the part that is emphasized, or rather, what it symbolizes in real life. For instance, it is suggested that the upper and lower parts of each figure, namely the head and the body of the person, the roof and the floors of the house, and the crown and the trunk of the tree, represent the mind and the body respectively (Machover, 1949). Emphasizing one over the other might be the result of a preoccupation concentrating on the body or the mind, which can also be thought as reality and fantasy. In recent empirical studies, disproportionate body and tree parts, such as unusually large eyes and crown, were found to be strongly related to anxiety and depression (Li et al., 2011; Gu et al., 2020).

Not only whole figures, but lines alone can say a lot about an individual. Straight, continuing lines drawn with precision and heavy pressure paint a whole different picture

from sketchy, trembling lines that are repeatedly erased and drawn with very faint pressure. The former might be a result of assertive or aggressive tendencies, while the latter might be the product of a hesitant and fearful hand, hence a similarly organized mind (Alschuler & Hattwick, 1947; Machover, 1949). Heavy line pressure may generally be a sign of emotional tension and restlessness (Halmatov, 2016). Insecurity and emotional disturbance are also reflected in chaotic, meaningless, or curved strokes (Alschuler & Hattwick, 1947). Similarly, shading a whole figure or a part of a figure might be related to depressive tendencies or a preoccupation with impulses related to the part of the figure that is shaded (Burns & Kaufman, 1972). Multiple studies revealed that drawings with poor line quality, such as shaded figures, chotic lines, stick figures, thick and interrupted lines seen in children's and adults' H-T-P drawings were significantly associated with anxiety, depression and symptom severity (e.g., Li et al., 2011; Dewaraja et al., 2006; Lee, 2019).

Individuals vastly differ in the amount of detail they add to a drawing, even if they are asked to draw the same thing. Drawing some part of a figure in a detailed manner might be a way to overemphasize it, just as putting fewer details in a part might show the opposite. Regardless of the content of the details, the tendency to make very detailed and realistic drawings is considered a result of obsessive tendencies (Machover, 1949). Overly simplified and shallow drawings also exist, which has been linked with low intelligence (Buck, 1948) although they might be markings of depressive or regressive tendencies as well (Machover, 1949). In support of this, empirical studies revealed that more anxious and irritable individuals tend to include more details and try to be more meticulous while drawing, while simplified drawings might suggest other personality characteristics in an individual, such as depressive qualities and low mental energy (Yang et al., 2019; Wang, 2017; Hui, 2014; Lange-Kuetthner et al., 2002)

Lastly, and maybe most importantly, one has to remember that every drawing tells a story. Rather than crude interpretations of each item that we see in a drawing, making cautious interpretations fuelled by the individual's own accounts is highly suggested (Burns & Kaufman, 1972). For instance, regardless of how realistic and proportionate a drawing is, it might be depicting a hostile and dangerous scene, such as a tree dying, a house

crumbling, or a person fighting. Therefore, the first question one should ask when interpreting drawings should be “What is happening?”.

2.2.2.2. House

The house symbolizes our most intimate relationships. In our desired home, we feel welcomed, secure, warm, and satisfied. Even though it is inanimate, a house accommodates and protects the life within. In this sense, the house drawing might be regarded as a portrait of ourselves, the body that we live in, and our family life (Buck, 1948).

Just as the self has an intricate relationship with its social environment, the house relates to its environment as well, through its doors and windows. Emphasis on these items might be related to one’s psychological accessibility and withdrawal tendencies (Buck, 1948). One might overemphasize these features by drawing multiple, very large and open doors or windows. On the other hand, the omission of these items, the omission of a doorknob, or the addition of fences, metal bars, or closed blinds might reflect issues with accessibility (Jolles, 1964). Absence of doors and windows in the drawing of a house were indeed found to be indicative of withdrawal and strong defensiveness in patients with mental health disorders (Hui, 2014). As mentioned, the roof of a house can be seen as a reflection of the mind. Shaded, large or highly detailed roof drawings might indicate anxiety or thought-related issues (Dilci, 2014).

The amount of detail drawn in a house might be related to the richness and warmth we find in our inner world and home life. The presence of a chimney, curtains, decorations, or a garden are all such examples (Buck, 1948).

2.2.2.3. Tree

In many cultures, plants are symbols of liveliness, growth, expansion, rootedness, and stability. These aspects of the self, therefore, are likely to be reflected in tree drawings. Since it is seemingly unrelated to the self, unlike the person or the house, the deepest aspects of the self can be freely projected in the tree (Buck, 1948).

Just as the trunk of a tree carries the whole and stands strong, the trunk shows how strongly and energetically we hold on to life, our ego strength (Burns, 1987). The trunk must be tall and wide enough to carry the tree, otherwise, growth will not be possible (Jolles, 1971). Scars and cut branches on the trunk might symbolize traumatic experiences (Jolles, 1971). While the roots reflect our connection to the past and a need for security and stability, the branches are there to grow, reach out to our future, and bring our ideals to life (Burns, 1987; Jolles, 1971, Çankırılı, 2011). Lastly, the crown is the most nurturing part of a tree, which might be bursting with leaves and fruits, or on the contrary, dying away. Trees drawn with fruits and leaves might be indicators of hopefulness and happiness (Altınköprü, 2017). Studies also came across drawings of dead trees, which was found to be associated with depressive symptoms, more specifically, emotional indifference and lack of vitality (Li et al., 2011; Fukunishi, 2002; Wang et al., 2019). The crown might reflect how satisfied we feel when reaching for our environment. Just as the branches reflect our relationship with the environment, the relative proportions of the parts of the tree show how balanced our inner world is (Buck, 1948).

2.2.2.4. Person

Among the three drawings, the one that feels most like a self-portrait is the person. In this drawing, one finds the chance to reveal their body image, their flaws, their emotions, and their sexual roles (Buck, 1948). Similar to other drawings, body parts can be thought of as symbols related to their actual function (Machover, 1949). For instance, just like the doors and windows of a house; the eyes, the ears, and the mouth enable us to communicate

with our environment. In this sense, emotional expressions drawn on a person's face might be revealing of our actual emotions. It was found by empirical research that negative facial expressions in person drawings - such as anger, fear or sadness - were observed more often in the drawings of individuals with mental disorders (Zhu et al., 2020). One might think of these body parts more symbolically as well. While the mouth drawing may reveal oral dependency needs, the eyes might reveal paranoid and anxious tendencies. (Çankırılı, 2011). Legs keep us standing and enable us to move, while arms and hands may symbolize the power and ambition to reach for and change our environment. In this sense, underemphasis of arms or hands might be related to difficulties determining one's own life and gaining independence (Akkapulu, 2010). As mentioned before, the head symbolizes the mind and intellect, whose relationship with the body is maintained through the neck. Therefore, relations between physical impulses and mental control might be communicated by the drawing of the neck (Machover, 1949). Proportion of the head relative to the body might also reflect imbalances in social and emotional functioning (Dilci, 2014; Çankırılı, 2011) Emphasis and omissions regarding body parts can be interpreted as a preoccupation with, or an inability to perform, the function they serve.

Lastly, although it has been linked with diminished interest in the test setting or low intelligence, one might also underemphasize a body part by drawing it in the form of a one-dimensional stick figure (Burns & Kaufman, 1972). Occasionally seen as the least form of detail, drawing the whole body as a stick figure might also be seen as a reflection of a poor and negativist inner world (Hammer, 1958). Drawing a one-dimensional body was might also indicate an avoidance of sexualizing the human figure, which is likely to be observed in some adolescents (Akkapulu, 2010).

2.2.3. Validity and Reliability Studies

The arena of projective testing is as controversial as it is captivating. Although popularly used in clinical settings across cultures, research proving the reliability and validity of projective tests are considered weak and few in number (Lilienfeld & Wood, 2000).

Similarly, the H-T-P test is yet to become a universally standardized test with objectively scorable criteria, despite the rich content it offers. One might state that is both the problem with and the advantage of projective tests. Nevertheless, empirical studies so far have yielded promising results.

2.2.3.1. Studies Conducted with Adult Participants

Research conducted with adult participants has shown that the number of emotional indicators found in H-T-P drawings are correlated with the presence of certain mental disorders. Li and colleagues (2011) tested 325 Taiwanese college students and marked the presence or absence of 35 emotional indicators found in their drawings. Their analysis revealed that all 35 items provided a good fit to measure self-reported anxiety and depression. In other words, the presence of these 35 indicators could significantly predict the probability that someone had anxiety or depression. These items include discontinuous and curved lines, very small drawing size, very thin trunk, dead branch, no mouth, black colored hands, hands, shadow painting, items repeatedly erased and circling. The researchers also warned for possible cultural differences affecting these drawings, such as the low probability of drawing a chimney in Taiwan where the weather is usually warm. Later on, these emotional indicators were found to be successful at discriminating between adults with psychiatric disorders and non-clinical college students (Li et al., 2014). Although this offers strong support for the construct validity of the H-T-P, some of the items they have chosen to evaluate consisted of very specific details, which were observed very scarcely among the drawings.

More recent studies examining depression and anxiety worked with more observable items. In a Korean sample, drawing a disproportionate house and person, and drawing a one-dimensional person (stick figure) were observed significantly more often in adults who had depressive symptoms (Lee, 2019). Depression has also been linked with a smaller tree size, a smaller trunk width and a smaller root size (Gu et al., 2020). Another study examining anxiety in adult cancer patients found that the H-T-P test could correctly predict the presence of self-reported anxiety. The strongest indicators of anxiety were

shaded figures, repeatedly erased figures, exceptionally large figures and lines drawn with weak pressure (Sheng et al., 2019).

Another field of use for drawing tests is trauma work. Since traumatic experiences are difficult to verbalize, drawing tasks have been used to understand the feelings and cognitions related to trauma and to allow the individual to work on them (Torem et al., 1990). There have been several studies examining the relationship between H-T-P drawings and abuse. It has been suggested by Buck (1948) that scars, knotholes or broken branches on a tree trunk were indicators of traumatic experiences. Buck (1948) even argued that the amount of scars and their placement on the trunk could reveal the duration and time of the traumatic event. This hypothesis was tested by Torem and colleagues (1990). According to their analysis, the presence of scars on tree drawings could significantly discriminate between adults who had a physical, sexual or verbal abuse history and adults who did not report any abuse. The number of scars was also significantly correlated with the duration of abuse. However, Buck's (1948) assumption about the placement of scars and the age of traumatization was not supported.

Another intriguing field of use is the use of H-T-P with anorexic patients. Research has shown that person drawings indeed reveal troubles with body image. Thomas and colleagues (2013) found that adult females with anorexia drew prepubertal person figures with narrow bodies, poor line quality and few details. They also observed that these individuals' tree drawings had better line quality than their person drawings. These indicators were able to aid in the correct identification of anorexic individuals.

Majority of studies on the H-T-P test have been conducted with schizophrenic patients. Kaneda and colleagues (2010) found that individuals who presented with schizophrenia tended to draw trees with a single-line trunk and single-line sharp branches. Another study that explored the difference between patients who showed dominantly negative and dominantly positive symptoms (Zhou et al., 2019). In this study, patients showing positive symptoms such as hallucinations and bizarre behavior drew huge people, colorful tree, oblique eyes, large hands and pointed tree crown significantly more often. On the other hand, patients showing negative symptoms such as anhedonia and avolition drew walls or ditches around the house, shrunken arms, significant omissions, lower door, narrow

windows and branches like knives significantly more often. These findings are in concordance with theories about what the H-T-P symbolizes. While participants having positive symptoms tended to be more self-expressive in their drawings, participants with negative symptoms tended to draw strong indicators of withdrawal and defensiveness. The writers concluded that the H-T-P test could support diagnosis when working with schizophrenia.

The H-T-P test can be used not only to assist in diagnostic processes but also to better understand individuals' personality traits in assessment and therapeutic contexts. An older study using Catell's 16 Personality Factors Test found that for men, 34 drawing indicators correlated with at least one trait; while for women, this number was 17 (Marzolf & Kirchner, 1972). This study is particularly interesting since it revealed that women and men with the same personality traits tended to have different drawing characteristics which correlated significantly with their personality traits.

It seems that since there are so many drawing characteristics evaluated within the H-T-P test, previous studies all struggled to select an inclusive, uniform set of drawing characteristics, which makes many of these studies hard to compare. Nevertheless, in a recent meta-analysis, 39 of the mostly studied drawing characteristics in the H-T-P drawings of children and adults were found to predict to mental disorders (Guo et al., 2023). Among these, characteristics related to the whole of the drawings, such as simplified drawings, small drawings, presence of bizarre items and inappropriate body proportions were the most significant predictors.

2.2.3.2. Studies Conducted with Child & Adolescent Participants

Since its development, the H-T-P has been extensively used with children by clinicians. Yet, studies conducted with children are scarce compared to adolescent or adult studies. Human Figure Drawings (HFD) in isolation were studied more often than the Tree and the Person. After Machover (1949) laid down the groundwork for the projective interpretation of HFD, Koppitz (1968) developed a valid and reliable scoring manual for

5–12-year-old children's human figure drawings. When developing this manual, Koppitz divided 30 emotional indicators in HFD into three sections: (1) Quality Signs, (2) Special Features, and (3) Omissions. Shading, interrupted lines, slanting figures, and transparencies were considered as quality signs. Very small or very large figures, disproportionate body parts, grotesque figures, vacant or oblique eyes, clinging arms, and drawing genitals were called Special Features. Lastly, omission of the eyes, mouth, nose, neck, hands, feet, arms, and legs was found to be observed significantly more often in children with emotional problems. Koppitz (1968) suggested that the presence of three or more indicators would indicate emotional disturbance. This scoring method was successful in differentiating between clinical patients and well-adjusted children. A study with a Turkish sample also yielded significant correlations between Koppitz scores of drawings and depression, anxiety and self-esteem (Çelik, 2018)

In more recent studies, the effectiveness of the H-T-P in various areas has been explored, if not in a standardized way. For instance, Kato and Suzuki (2016) specifically examined the size of drawings in relation to Five-Factor Personality Traits, revealing that larger drawing sizes correlated with higher openness scores whereas smaller drawing sizes correlated with higher neuroticism. This study was conducted with adolescents. Smaller tree size was also found to be related to low social competence and refusal to go to school in adolescents (Suzuki & Kato, 2016).

Another study conducted with adolescents attempted to prove if common indicators of aggression in the H-T-P drawings, such as big hands and presence of teeth were valid indicators of self-reported aggression. The results failed to demonstrate a meaningful relationship between the 6 chosen indicators and aggression levels. Different from studies with adults, indicators such as simplified drawings, blackening the paper, hands behind the back, and omitting facial expressions were found to be significant predictors of depression in junior high school students (Guo et al., 2023). Similarly, Fischetto (1989) was able to demonstrate the validity of 41 emotional indicators as a measure of suicidal tendencies.

Upon reviewing the majority of the studies, it was seen that researchers have predominantly employed the H-T-P to assess whether children encountered emotional difficulties following traumatic incidents. Van Hutton (1994) developed a scoring system specifically as a measure for abuse. In this scoring system, there are four item categories: (1) Preoccupation with Sexually Relevant Concepts, (2) Aggression and Hostility, (3) Withdrawal and Guarded Accessibility, (4) Alertness for Danger, Suspiciousness, and Lack of Trust. Although this scoring system was originally empirically tested, later studies failed to demonstrate its reliability and validity as a determinant of sexual abuse (Palmer et al., 2000). Another study tested the same hypothesis using Koppitz's (1968) scoring manual (Hibbard & Hartman, 1990). Still, the emotional indicators in the H-T-P as a whole were not able to predict whether a participant was abused or not. Several items such as legs pressed together, genitals, and big hands were observed significantly more often in the drawings of children who were sexually abused than in non-abused children. Nevertheless, it was concluded that the H-T-P on its own was a risky tool for the identification of abuse since many non-abused children drew the same emotional indicators as abused children.

Perhaps the value of the H-T-P lies not in its diagnostic potential but in its ease of administration to multiple children in various settings, providing quick insights into whether they might be experiencing emotional challenges. In this context, researchers, especially in Asia, have been curious about the effect of natural disasters on children's drawings. In an attempt to make a comprehensive assessment and comparison of anxiety levels of tsunami-affected children in Sri Lanka, Dewaraja and colleagues (2006) administered the H-T-P to 136 children between the ages of 10-16. The H-T-P drawings and self-reported anxiety scores uniformly pointed out that boys had been experiencing higher levels of anxiety than girls. The H-T-P could reach the same results without asking the participants questions that could be regarded as threatening or triggering. Similarly, 131 Haitian children affected by the 2010 Earthquake were administered the H-T-P in order to qualitatively and quantitatively explore themes related to resilience and vulnerability (Roysircar et al., 2017). It was found that resilience in children was reflected in the strength and nurturing capacity of the H-T-P drawings and their connectedness with the environment. Vulnerability, on the other hand, was reflected in negative, exposed, and

empty self-expressions, such as simplified figures, exposed roots with no ground line, branches with no leaves, weapons, and omitted arms or legs. In another study, total scores on Koppitz's (1968) scoring manual were found to be significantly positively correlated with traumatization levels of 7-12 year-old children (Malchiodi, 2009).

2.3. Attachment Theory

Individuals are inherently social, seeking affection and safety from others from the moment they are born. One's need to engage in interpersonal relationships resembles one's "hunger for food" (Bowbly, 1973, p. 21). The first relationship that we form with our mother figure is perhaps the most important one. Attachment Theory (Bowlby, 1973) suggests that the quality of our primary relationships, especially with our primary caregiver, becomes internalized and shapes our expectations for future relationships. Just like how our bodies get accustomed to the climate we live in, the bond forged between mother and infant establishes a psychological climate that shapes our relational patterns throughout life.

If infants are securely attached to their primary caregivers, they become able to form loving relationships based on mutual trust when they grow up. If, on the other hand, the infant-mother dynamics are formed in a way such that the infant struggles to develop trust in the mother's presence during moments of danger or that they will receive unconditional love, the infant becomes insecurely attached to the mother. The child forms "internal working models", mental representations of self and others, based on the overall availability of their primary caregiver to meet their needs and stay at a desired proximity to the child (Solomon & George, 2008; Fonagy & Target, 2003). This internalized relationship also determines if one feels worthy or unworthy of care (Sroufe, 1988). It has been suggested in the large body of research that attachment security is a significant determining factor of psychopathology and resilience in adulthood (Herstell et al., 2021; Darling Rasmussen et al., 2019)

Initial to the development of Attachment Theory, Bowlby (1973) was studying how children coped with their mother's temporary loss. It was suggested that children reacted to their mother's absence in different ways, depending on the quality of their attachment (Ainsworth et al., 1971). Securely attached infants can tolerate the absence of the mother. Even if they get anxious under unfamiliar circumstances, they can be easily soothed upon reuniting with her. Insecurely attached children, however, develop other mechanisms to cope with the mother's absence. Some children become so agitated and anxious that they cannot be soothed by the mother's arrival. Other children act indifferently to the mother's absence or return, they show minimal interest in communicating or being soothed. Lastly, a minority of children engage in inconsistent, dysregulated behaviors at times of separation. In other words, they lack a proper coping mechanism. Four attachment styles were defined upon exploring these four different coping patterns: (1) Secure, (2) Anxious-resistant, (3) Anxious-avoidant, and (4) Disorganized (Ainsworth & Bowlby, 1991; Ainsworth & Bell, 1981; Main & Solomon, 1990). It was suggested that all individuals exhibited one of these attachment styles.

Attachment styles were primarily investigated with infants, by a procedure called the "Strange Situation" (Ainsworth, 1969). In this procedure, infant-mother dyads are brought into an unfamiliar room. Infant behaviors are observed: (1) when the mother is in the room with the infant, (2) when the mother leaves the room, (3) when a stranger enters and attempts to communicate with the infant, and lastly, (4) when the mother returns. It was found that infants' reactions reflected the specific caregiving patterns of their mothers.

As children grow older, their sensitivity to the proximity of their mothers decreases, as they no longer need their mothers to be close to them at all times to meet their needs and make them feel safe. Moreover, school-aged children begin to form new attachments with their peers as they gain independence and autonomy (Kerns & Brumariu, 2016). Therefore, using Ainsworth's procedure with school-aged children may not be suitable. Attachment is also conceptualized as the organization of self-protective strategies at times of danger (Crittenden, 2008 as cited in Crittenden et al., 2010). Therefore, attachment assessments for school-aged children utilize representational methods such as story-

completion tasks or picture cards to activate these self-protective strategies (Kerns & Brumariu, 2016).

2.3.1. Drawings and Attachment

Attachment security is a significant factor that shapes children's inner world and relationship patterns, which are frequently reflected in children's drawings. Therefore, manifestations of attachment representations in drawings have been a natural object of curiosity. It was Kaplan and Main (1985, as cited in Fury et al., 1997) who initially explored this relationship through children's family drawings and identified specific markers for each attachment style.

Fury and colleagues (1997) evaluated family drawings of 8 and 9-year-olds using two methods: (1) global rating scales indicating the general impression of the drawing and (2) specific signs hypothesized to be markers of attachment classifications. These signs included: child and mother positioned far apart on page, omission of mother or child, arms close to body as indicators of anxious-avoidant attachment; unusual figure size, exaggeration of hands/arms, figures crowded or overlapping as indicators of anxious resistant attachment; and negative facial impressions, incomplete figures, floating figures, lack of detail, mother not feminized as indicators of insecure/disorganized attachment. Global rating scales, on the other hand, evaluated the vitality, pride, vulnerability, emotional distance, tension, role reversal, and bizarreness in each drawing. It was found that both global impressions and specific indicators predicted early attachment history; controlling for intelligence, life stress, and emotional functioning (Fury et al., 1997). However, specific indicators were found to have weak predictive power in isolation. The researchers suggested making more integrative assessments instead of relying on specific markers of attachment (Fury et al., 1997; Madigan et al., 2003; Pace et al., 2022).

Nevertheless, many studies found striking differences between family drawings of children with different attachment styles. In general, it can be inferred from children's drawing characteristics that "avoidant attachment strategies de-emphasize intimate

relationships, while resistant attachment strategies are preoccupied with close relationships" (Madigan et al., 2003, p. 19). Children with an anxious-resistant attachment have unstable self and other representations. They have difficulty determining their distance from others, wanting to be extremely close and separated at the same time. These are manifested by drawing the mother and the child extremely close, poor differentiation of figures, exaggerated details, and drawing the mother larger than other figures. On the other hand, children with an avoidant attachment style have a difficult time attaining positive self and other representations, compensated by denial of emotions and overindependence. These are observable in their drawings of disguised and unindividuated figures, a larger self compared to other family members, no emotional expressions, lack of details, and figures positioned far away from each other (Procaccia et al., 2014). An additional study revealed that family drawings made by 7-year-olds with disorganized attachment were distinguishable, even to the uneducated eye, from drawings of securely attached children, by high levels of negative overall impression, disorganization, family chaos, carelessness, and bizarreness (Madigan et al., 2004). However, some studies that have failed to reach reliable results from these markers suggest that rather than make attachment classifications, family drawings should be used to understand specific areas of distress, complementary to other methods of attachment classification (Carr-Hopkins et al., 2017).

Other drawings, such as the Bird's Nest Drawing and Human Figure Drawing tasks, revealed significant correlations to attachment security (Kaiser, 1996; Maharani et al., 2023). In a qualitative study about the H-T-P, 29 drawing markers were found to be significantly related to attachment classifications (Gilbert, 2015). Some of the markers specific to avoidant attachment were small drawing size, lack of detail, stick figure, light line pressure, shading and small windows. Markers related to anxious-resistant attachment were: excessive details, excessive symmetry, long neck, heavy line pressure and again, stick figure. Additionally, the grounding of the house, the tree, or the person was found to be related to the need for support/security. Although these preliminary results reveal that the H-T-P might also carry meaningful manifestations of attachment representations, the H-T-P has never been quantitatively studied concerning attachment.

2.4. Mentalization Capacity

Attachment is closely linked to how individuals perceive others in relationships. More precisely, the establishment of internal working models fundamentally depends on the capacity to develop mental representations of intentions and beliefs that underlie behavior. However, mental states are naturally unobservable by the senses. Instead, as social beings, we develop the ability to recognize and hypothesize about mental states motivating behaviors. This ability, crucial to developing healthy interpersonal relationships and a cohesive sense of self, is called Mentalization, or Reflective Function (Fonagy, 1991; Fonagy et al., 1998).

Understanding mental states, first and foremost, helps us to regulate our emotions by learning the causes of events (Fonagy & Target, 1997). However, infants are not born with this capacity (Fonagy et al., 2002). Initially, infants are unaware of the true nature and cause of their physiological states and events happening in outer reality. Hence, they are unable to regulate their emotions by themselves. Reflective function develops in the context of one's primary attachment relationship (Dunn et al., 1987). When the mother figure is capable of understanding and responding to the infant's inner reality, infants also become capable of understanding and differentiating between their inner and outer reality.

Mentalization capacity develops depending on the quality of the mother's responses to the infant's inner experiences. The mother figure has to be accurate, timely, and finely tuned in her responses, which is also called contingent marked mirroring (Gergely, 2007). When the mother "mirrors" to the infant his/her internal reality and keeps changing her responses depending on the feedback coming from the infant, the infant slowly recognizes his/her agency, which is key to emotion regulation and impulse control. The mother's mirroring quality is, in turn, affected by her own reflective functioning capacity, which contributes to the development of a secure attachment between the mother-child dyad (Fonagy et al., 1991).

In time, children learn about the presence of mental states and how to predict them in others. There are multiple types of mental states, such as affects, beliefs, and intentions. Mentalization capacity strongly determines one's ability to speak about these mental

states, namely, Mental State Talk (MST; Bekar et al., 2014). Children learn to talk about internal states and expand their vocabulary in accordance with their development. By 2 years of age, most children start talking about basic feelings and make references to their causes (Dunn et al., 1987). In time, they become able to talk about more complex feelings and cognitions (Knüppel et al., 2007; Shatz et al., 1983). Mentalization capacity keeps improving with age (Poznyak et al., 2019). However, the development of MST was found to be largely affected by the content and frequency of caregivers' own MST in their discourses with their children at infancy (Dunn et al., 1987). MST is often utilized as a tool to measure Reflective Function (Bekar et al., 2014). Mentalization capacity of children and their caregivers, measured by their MST, was found to be a protective factor against emotional and behavioral problems (Bekar et al., 2018; Benbassat & Priel, 2012; Halfon et al., 2017; Halfon & Bulut, 2019).

2.4.1. Drawings and Mentalization

As mentioned, mentalization is a capacity of imaginative curiosity (Fonagy et al., 2012). It affects how we perceive and communicate mental states. Drawing is such a method of communication, moreover, it is considered to be a facilitator of communication. In this sense, the creative process of art-making, in the context of a therapeutic relationship, might facilitate mentalization, which is the basic working principle of mentalization-based art psychotherapy (Havsteen-Franklin, 2016). Moreover, the opposite might also be true. Our ability to create drawings that accurately and richly reflect our mental states may be affected by our mentalization capacity.

Although it seems to be worth investigating, research addressing the relationship between mentalization and drawings is limited. In fact, only one study was found to be investigating this relationship. In this study by Rosen and colleagues (2023), the content and form of 5-12-year-old children's self, caregiver and family drawings were explored in relationship to mental state talk and attachment quality. Content referred to characteristics such as number of figures, completeness, interest in details, size and some

specific additions to drawings, like animals, actions or letters. Form referred to characteristics such as line and shape quality, integration, implied energy, and developmental level. It was found that content and formal features of family and caregiver drawings were positively correlated with total and emotion-based MST. Attachment quality was also positively correlated with content scores of family drawings, within the inpatient sample only. These results evoke curiosity regarding the relationship between mentalization and H-T-P drawings.

2.5. Current Study

The current study aims to explore children's H-T-P drawings in relation to their attachment security and mentalization capacity. According to the results of a survey, the H-T-P test was found to be the 8th mostly used projective test in clinical practice (Camara et al., 2000). As many researchers concluded, the H-T-P test can be a valid and helpful tool to complement the diagnostic process. Moreover, due to their ambiguous nature, children view these drawings as more non-threatening than self or family drawings which more directly explore themes related to the self (Gilbert, 2015). Nevertheless, studies aimed at strengthening the validity of the H-T-P and exploring its rich area of applications are limited. In addition, despite its common use by mental health professionals in Turkey, there are no empirical studies about the H-T-P conducted with Turkish children. Human Figure Drawings are studied in more detail, whereas the H-T-P in combination was overlooked (see Akkapulu, 2010; Sayıl, 2004). Therefore, the main goal of this study is to respond to this gap in the literature by examining the use of the H-T-P test in a Turkish sample of school-aged children.

It can be said that the current study has two main goals. Developing and testing a scoring manual for the use of H-T-P with children is one of these goals. It can be observed in the literature review that many studies trying to establish a valid scoring system for the H-T-P ended up including different emotional indicators in their measures. Although the themes are common, the number of emotional indicators and their wording are vastly different in each study. As a result, the literature is filled with very specific scoring items

which are seldom observed in drawings. In a standardization attempt, these items would be eliminated. Indeed, it was concluded by many studies that the general structural qualities of the H-T-P drawings are much more reliable tools for measuring difficulties experienced in interpersonal relationships than specific markers of emotional disturbance (Vass, 1998). Machover (1949) also admitted that the "structural and formal aspects of a drawing such as size, line, and placement," were "less subject to variability than content, such as body details, clothing, and accessories." (p. 6). For instance, drawing legs pressed together was included in many studies as an emotional indicator, but found to have significant implications in only one (Hibbard & Hartman, 1990). On the contrary, deviations from regular sizes and proportions were proven to be significant indicators of emotional disturbance in majority of the existing research (Guo et al., 2023). Moreover, studies testing the validity and reliability of the H-T-P test with children are scarce in previous literature. This why, one of the goals of the current study is to test the validity and reliability of the H-T-P by developing a scoring manual which includes emotional indicators that are observed most in previous studies, which were also found to be related to attachment (see Kaplan & Main, 1985; Fury et al., 1997; Gilbert, 2015).

In this scoring manual, seven categories of drawing characteristics are scored quantitatively. These categories are line quality, size, location, level of detail, distortions, negative facial expressions, and bizarre items. Each category has several items, which are scored between 0-1 or 0-2 depending on the nature of the item. Higher scores are obtained when more problematic drawing characteristics are present. For example, a higher score in line quality refers to a higher observation of interrupted lines, chaotic lines, heavy or light line pressure and shading. A high score in size refers to either too small or too large drawings. By adding all category scores together, a total H-T-P score is obtained. Higher total H-T-P scores indicate a higher amount of problematic emotional indicators observed in all drawings.

The H-T-P is hypothesized to reveal self-representations and patterns in interpersonal relationships (Buck, 1948). Although attachment security and mentalization capacity are significant contributors to the development of self and relationships, there are almost no studies examining the combination of these three areas of research. Therefore, the second

goal of the current study is to explore the relationship between H-T-P drawings and attachment & mentalization. It is mainly hypothesized that more insecurely attached children will obtain higher scores in the newly developed H-T-P scoring manual. In addition, children who engage in less MST are similarly expected to have higher H-T-P scores. Meanwhile; age, gender, intelligence, and psychological problem levels of these children will be controlled, since drawing characteristics are known to be affected by these variables (see Goodenough, 1926; Yavuzer, 2016; Guo et al., 2023).

In summary, this study aims to expand the H-T-P test's area of use by exploring how attachment and mentalization are reflected in these drawings. The findings of this study are anticipated to enrich our understanding of children's internal representations in clinical settings and address the research gap evident in the literature. Hypotheses of this study are presented below:

H1: Controlling for age, gender, intelligence and psychopathology, there will be a relationship between attachment security and H-T-P scores, such that higher levels of attachment security will predict lower H-T-P scores.

H2: Controlling for age, gender, intelligence and psychopathology, there will be a relationship between MST scores and H-T-P scores, such that higher levels of MST scores will predict lower H-T-P scores.

H3: There will be differences in the H-T-P scores of children with different attachment styles, with children classified as securely attached expected to demonstrate lower H-T-P scores compared to those classified as avoidant, ambivalent, or disorganized.

METHODS

3.1. Participants

This study included 85 participants (52% male) aged between 6 and 12 years. Mean age was 8.25 (*SD* = 1.65). Only 23.5% of participants were aged 10-12, however, the kurtosis and skewness levels indicated relatively normal distribution (Skewness = .44, Kurtosis = -.67). The researcher aimed to obtain results from an age range which could benefit from the use of drawing tests the most. It was revealed that drawing tasks are especially effective and useful in school-aged children who have adequate drawing skills yet a limited capacity of verbal self-expression compared to older children (Driessnack, 2005; Salmon, 2001). Previous validity studies with Turkish samples were mainly conducted with school-aged children as well (Akkapulu, 2010). Therefore, this age range was selected for the current study.

A major portion of the data was already collected at the Psychological Counseling Center at Istanbul Bilgi University, from participants who have applied for routine psychological testing services to the center since 2016. A very small portion of participants voluntarily responded to the research announcement shared by the researcher. Among a total of 128 participants, 11 participants who did not fit the age range were excluded from the study. Additionally, 19 participants with an intelligence score lower than 70 were excluded since these scores are considered extremely low, possibly denoting mental retardation (Kaufman et al., 2006). One participant was excluded due to being diagnosed with Autism Spectrum Disorder. Lastly, 12 participants were excluded since they were not administered all the necessary instruments. Ultimately, 85 participants were included in the study.

Mean Full Scale Intelligence Quotient (FSIQ) score of participants were 102.4 (*SD* = 15.66). 62% of intelligence scores were obtained using the WISC-IV *(M*= 99.93, *SD* = 14.71), while the rest was obtained using the WISC-R *(M* = 105.26, *SD* = 16.21).

CBCL scores revealed that 43.5% (*n* = 37) of participants were in the clinical range for internalizing problems while 25.9% (*n* = 22) were reported to have externalizing

problems in the clinical range. Lastly, 30.5% (n = 26) of participants had comorbid (internalizing and externalizing) problems. A detailed overview of age, gender, intelligence and behavioral problem levels are presented in tables 2.1 and 2.2.

Table 3.1. Demographic Characteristics of Participants

	n	*%*	*M*	*SD*	Skewness	Kurtosis
Gender						
Female	41	48				
Male	44	52				
Ages 6-8	49	57.6				
Ages 9-12	36	42.4				
Age			8.25	1.65	.44	-.67
Female			8.07	1.46	.48	-.02
Male			8.41	1.82	.32	-1.08
Intelligence			102.38	15.66	.06	-.79
Female			102.79	15.36	-.17	-.83
Male			102.00	16.13	.25	-.67
CBCL Total t Scores			61.21	8.74	-.48	-.03
Female			60.66	9.28	-.54	-.04
Male			61.73	8.29	-.38	-.03
CBCL Internalizing t Scores			61.56	9.24	-.32	-.12
Female			60.88	9.90	-.35	-.07
Male			62.20	8.64	-.21	-.28

CBCL Externalizing t Scores	57.22	10.84	-.77	2.64
Female	57.05	10.98	-.16	-.00
Male	57.39	10.82	-1.39	5.78

Note. Standardized t values of CBCL scores are used in analysis in order to rule out the effect of age in score interpretation.

Table 3.2. Symptom Levels of Participants

Categories	Normal	Borderline	Clinical
Total	35 (41.2%)	12 (14.1%)	38 (44.7%)
Female	20 (48.8%)	2 (4.9%)	19 (46.3%)
Male	15 (34.1%)	10 (22.7%)	19 (43.2%)
Internalizing	33 (38.8%)	15 (17.6%)	37 (43.5%)
Female	16 (39.0%)	8 (19.5%)	17 (41.5%)
Male	17 (38.6%)	7 (15.9%)	20 (45.5%)
Externalizing	52 (61.2%)	11 (12.9%)	22 (25.9%)
Female	25 (61.0%)	4 (9.8%)	12 (29.3%)
Male	27 (61.4%)	7 (15.9%)	10 (22.7%)

Note. Numbers indicate: Frequency (Percentage)

3.2. Instruments

3.2.1. House-Tree-Person Test

The House-Tree-Person test (HTP) originally found by Buck (1948) and developed by Buck and Hammer (1969) was administered to the participants. Participants were asked

to draw a house, a tree, and a person (of both sexes in turn) in separate sheets of paper. Although there are different applications in the literature, only one color was provided to participants in the current study. Afterwards, Post-Drawing Interrogation (P-D-I) questions were asked for each completed drawing (Buck, 1948). These questions are presented in Appendix A. For the purposes of this study, answers to these questions were only used in case there was a need to identify ambiguous drawing elements.

Buck (1948) originally did not obtain validity or reliability coefficients for the H-T-P test. As mentioned, later attempts at obtaining validity and reliability scores were mainly conducted with adults. The H-T-P test was previously found to have concurrent validity with depression and anxiety levels of adults (Spearman *r* scores between .14 and .23; Li et al., 2011). In a study focusing on resilience and vulnerability of children aged 6-15, the H-T-P test was found to have acceptable internal consistency and inter-rater reliability (interrater reliability = .78; internal consistency of resilience items = .87, internal consistency of vulnerability items = .77; Roysircar et al., 2017).

3.2.1.1. Development of the H-T-P Scoring Manual

A House-Tree-Person Test Scoring Manual was developed in order to gain insight into children's drawing characteristics. In this section, the development process will be explained.

Initially, a literature review was conducted. The literature examined included both the theoretical background of the H-T-P and recent validity and reliability studies. The research of Li and colleagues (2011) and Guo and colleagues (2023) were the most influential empirical studies for item selection since these studies successfully examined the relationship between the H-T-P test and several mental health dimensions. Meanwhile, the interpretative works of Burns (1987) and Machover (1949) mainly provided the theoretical background needed for item selection.

Drawing from the literature review, a preliminary item pool was made. In this pilot version, there were four main item categories, named *general characteristics* (each item

in this category was scored four times, for the house, tree, and the persons separately), *characteristics of the house, characteristics of the tree* and *characteristics of the person* (scored for both persons in turn). The same categorization was used in previous studies. In total, there were 129 items. While creating the manual, attention was paid to examine each item in more depth, rather than just scoring their presence or absence like previous studies. For example, for the scoring of the tree's trunk, three separate items were added. The first was related to its presence, which was scored a 0 (not present) or a 1 (present). Then, two additional items were scored regarding the trunk's length and width, on a 3-point scale.

Using the initial item list, 40 drawings, made by 10 of the current study's participants, were scored by 3 raters, i.e., the researcher (BK) and two Master's students. Internal consistency could not be calculated due to small sample size, however, inter-rater reliability was calculated as .78. Afterwards, the raters came together to evaluate the items and the scoring process. Several items were eliminated since they were not observed or did not show any variability (e.g., *legs turned inwards, pointed chin, clothes too big, opposite-sex drawn first*), whereas some items were eliminated because it was agreed that they were difficult to understand (e.g., *repeatedly erased figures, head drawn very carefully, rotated figure, stance*). Afterwards, with the guidance of an expert / Assoc. Prof. Sibel Halfon??, the remaining items were revised.

After the pilot phase, it was decided that in order to simplify the scoring manual, (1) the same set of items should be used to score each drawing, and (2) items exploring similar aspects of the drawings should be categorized under themes. For the first decision, items specific to one drawing were eliminated, such as *arms turned inwards* (person) and *thick walls* (house). Remaining items were globalized, i.e., instead of *small house,* one global item called *small figure* was added. There were only two exceptions: items *one-dimensional figure* and *sadness, anger, fear,* and *disgust* (negative facial expressions) which were scored only in the person drawing were not removed since they were thought to be significant. This way, 14 easy-to-understand, global items were left, which were applicable for each drawing. A detailed omissions list was made in case one was curious

about omissions made in each drawing specifically, but these scores were not counted towards the total score.

Secondly, remaining items were categorized under themes with the help of an expert. For example, it was agreed that *chaotic lines, line pressure* and *interrupted lines* all measured line quality in general. On the other hand, *significant omissions, one-dimensional figures, simplified figures* and *detailed figures* all referred to the overall detail level in drawings. In the end, seven general categories were identified. These were *line quality, size, location, overall detail, distortions, negative facial expressions* and *bizarre items*. Out of these categories, only *negative facial expressions* were specific to person drawings. The finalized item list and descriptions can be seen in Appendix B.

In the finalized scoring manual, some items are scored as present (1) or absent (0), while others are scored on a three-point scale: not present (0), somewhat present (1), and present (2). The total score for each category is formed by adding the scores obtained from the items under the category. Higher scores indicate poorer drawing quality and a higher level of emotional disturbance, according to the existing literature (*see* Guo et al., 2023; Gilbert, 2015; Rosen et al., 2023; Li et al., 2011, Lee, 2019). In two categories, i.e., *size* and *overall detail*, there are opposite items. Specifically, the *size* category has two opposite items called *small figure* and *large figure*. Similarly, the *overall detail* category includes *simplified figure* and *detailed figure* items. In these cases, only one of the two items are scored while the other item must be scored as zero. The scoring method is presented in detail in figures 2.1 and 2.2.

Figure 3.1. H-T-P Scoring Manual

Category	Items	Scores		
line quality	1. interrupted lines	0 - not present	1 - present	
	2. chaotic lines	0	1	
	3. light lines	0	1	
	4. heavy lines	0	1	
	5. shading	0	1	
size	6. small figure	0 - not present	1 - somewhat present	2- present
	7. large figure	0	1	2
location	8. drawn off-center	0	1	2
distortions	9. poor proportions	0	1	2
	10. disconnected parts	0	1	2
bizarre items	11. bizarre items	0	1	
overall detail	12. simplified figure	0	1	2
	13. detailed figure	0	1	2
	14. significant omissions	0	1	
	1p. one-dimensional body parts	0	1	2
negative facial expressions	*2p. anger*	0	1	
	3p. fear	0	1	
	4p. disgust	0	1	
	5p. sadness	0	1	
Detailed omissions - house	door	0	1	
	windows	0	1	
	roof	0	1	
	chimney	0	1	
Detailed omissions - tree	trunk	0	1	
	canopy	0	1	
	branches	0	1	
	leaves	0	1	
	fruits	0	1	
	ground line	0	1	
	root	0	1	
Detailed omissions - person	head	0	1	
	hair	0	1	
	eyes	0	1	
	ears	0	1	
	nose	0	1	
	mouth	0	1	
	hands	0	1	
	feet	0	1	
	arms	0	1	
	legs	0	1	
	neck	0	1	

Figure 3.2. Scoring Table Showing The Calculation Of Category And Total H-T-P Scores

ITEM TOTALS		
Total line quality	total light	
	total heavy	
	total chaotic*	
Total size	total small	
	total large	
Total location		
Total distortions		
Total bizarre items		
Total overall detail	total simple**	
	total detailed	
Total Negative Facial Expressions (p)		
House Total		
Tree Total		
Person Total	**Person 1 Total**	
	Person 2 Total	
H-T-P Total		

Note. *total chaotic = items 1 + 2 + 5, **total simple = items 12 + 14 + 1p.

Drawings were scored by the researcher and a Clinical Psychology Master's Student who helped with the development of the scoring manual. Initially, the raters mutually scored 50 of the 415 drawings in order to obtain an inter-rater reliability score. Agreement was high between the two raters (Cronbach's alpha = .93), which shows inter-rater reliability. The rest of the drawings were divided between the raters. Overall, the researcher coded 265 drawings while the Master's student scored 200 drawings. Internal consistency between the finalized set of items were found to be .72. When calculating internal consistency, items *small figure* & *large figure* and *simplified figure* & *detailed figure* were entered into analysis as one total item, since only one of the items were scored at a time. Moreover, since some items were scored on a 3-point scale instead of 2, standardized Cronbach's alpha is reported. According to George & Mallery (2003), this value indicates an acceptable level of internal consistency.

3.2.2. Attachment Doll Story Completion Test (ASCT)

Attachment Doll Story Completion Task was developed by Bretherton and colleagues (1990) as play-based technique to evaluate internal working models of 3-year-olds. It was later adapted to school-aged children by Granot and Mayseless (2001). In this task, children are presented with five story beginnings which are supposed to activate their attachment system. These stories are acted out with dolls representing family members (mother, father, grandmother and child) and several props such as a table and a bed. The child is asked to tell how each story continues, along with what the child figure thinks and feels. Uluç (2005) adapted this task into the Turkish language with an inter-rater reliability score of .81.

Children's stories are coded in terms of both attachment security and attachment prototypes. Initially, each story is coded as secure or insecure. If two or more stories are coded as insecure, the child is overall classified as insecure. If only one story is coded as insecure, the child is classified as fairly secure. The child is classified as secure if all five stories are coded as secure. Later, the stories as a whole are coded for how closely they resemble the four different attachment prototype strategies (secure, avoidant, ambivalent, disorganized) on a scale from 1 to 5. One of the prototypes has to be coded higher than the others. This highest-coded prototype is assigned as the predominant prototype for the child.

In the procedure, the administrator initially introduces the family members to the child and tells a warm-up story, which is not coded. In the *Spilled Juice* story, the family is having dinner while the child accidentally spills her/his glass of juice. For a secure classification, the parents are expected to reinstate the usual dinner routine by cleaning the juice, giving new juice to the child and continuing their dinner, without acting harsh or punitive. In the *Monster in the bedroom* story, the child goes to his/her bedroom to sleep, then sees a monster and calls for the parents. For a secure classification, the parents are expected to comfort the child and deal with the feared situation without rejecting the child's fear. In the *Hurt Knee* story, the child climbs a rock, falls and hurts his/her knee. For a secure classification, the parents are expected to tend to the child's pain by giving

both emotional and instrumental help, and relieve the pain. In the *Separation* story, the parents go on holiday and leave the child with the grandmother for a week. For a secure classification, the child is expected to be able to cope with the parents' absence and spend a good time with the grandmother. In the *Reunion* story, the parents return from their holiday. For a secure classification, the child and the parents are expected to react positively to seeing each other and return to their daily routine.

Secure attachment prototypes are characterized by the accessibility, soothing ability, warmth and sensitivity of the parents. The stories are expected to be coherent, involving both negative and positive feelings and a positive resolution. Avoidant attachment prototypes are characterized by minimal emotional expression, insignificance of the relationship with parents and a limited narrative in general. Ambivalent attachment prototypes are characterized by intensified emotional expression, unstable relationship with the parents and a lengthened, detailed story narrative. Lastly, Disorganized attachment prototypes are characterized by inconsistent emotional expressions, abusive parents or role reversal between parents and the child, and a chaotic and illogical story narrative.

The researcher coded all of the ASCT data herself. Prior of coding, the researcher received 3 hours of training for the coding system of Granot and Mayseless (2001) and obtained an average reliability score of .92 on 5 coding examples. The procedure was coded by reading verbatim transcripts of each participant, as well as watching their video recordings in some cases, when researcher felt the need to see the tone and body language of the child.

3.2.3. The Coding System for Mental State Talk

As a measure for mentalization capacity, The Coding System for Mental State Talk in Narratives (CS-MST; Bekar et al., 2014) was used to assess the quality and frequency of mental state words used by children in their ASCT narratives. The coding system was later adapted to Turkish by Bekar and Çorapçı (2016) with an average interclass

correlation coefficient of .92. The coders use verbatim transcripts of the ASCT stories in order to find and categorize mental state words. The coding system consists of five main categories of mental state words and ten overall categories. The five main categories are: *emotions (happy, angry, suprized)(C1), cognitions (want, need, think, wonder…) (C2), perceptions (see, hear, look…) (C3), physiological states (asleep, hungry, tired…) (C4)* and *action-based mental states (cry, hug, kiss, lie…) (C5).* The words are also categorized in terms of whose mental state they belong to (self or other - the child and the others in the story) and whether the mental state is connected to a cause or not. The sixth and seventh category include words referring to the mental states of the child himself/herself *(C6)* or the administrator *(C7)*. The eighth category includes mental state words that are used in a situational manner, without referring to any particular character's mental state *(C8)*. The ninth category includes words that emphasize the opaqueness of mental states *(C9)*, since it is an essential aspect of one's mentalization capacity to acknowledge that mental states cannot be fully known. Lastly, the tenth category includes inappropriate mental state words which point to pseudo-mentalization, in other words, inaccurate and sometimes hostile mental state attributions *(hit, punch, kill…) (C10)*. Total MST score is obtained by adding all 10 categories.

MST was coded by the researcher and a research assistant who was blind to study conditions. Both raters received training for CS-MST prior to coding. The researcher coded a major portion of the procedures while the research assistant coded only 12% of the data. Average inter-rater reliability between the raters was .97.

3.2.4. The Child Behavioral Checklist for Ages 6-18 (CBCL)

The Child Behavioral Checklist (Achenbach, 1991) for school-aged children (6-18) was used in order to control for existing psychopathology, operationalized by behavioral problems observed in children aged 6 to 18. This checklist includes 112 items indicating problematic behaviors such as *"Düşünmeden hareket eder, aklına eseni yapar.", "Tırnaklarını yer."* and *"Ev, okul ya da diğer yerlerde kurallara uymaz, karşı gelir."*.

Mothers or fathers of participants can complete this chectlist by selecting how true each item is for their child, on a 3-point scale (0 = *not true,* 1 = *somewhat true,* 2 = *very true*). They also answer several demographic questions, i.e., the age & gender of their children and the age, education level and employment status of the parents; and academic, extracurricular and social activities of the child. This scale consists of Internalizing, Externalizing and Total Problem subscales. Internalizing Problems include depression, anxiety and withdrawal problems while Externalizing Problems include items about aggression and rule-breaking behaviors.

The CBCL is widely used with high internal consistency (α = .97) and test-retest reliability (r = .94). The scale was successfully adapted into Turkish with high test-retest reliability and internal consistency (r = .93, α = .94; Erol & Şimşek, 2000).

3.2.5. Wechsler Intelligence Scales for Children

In order to control for intelligence, The Wechsler Intelligence Scale for Children, Revised Edition (WISC-R; Wechsler, 1974) and the Fourth Edition (WISC-IV; Wechsler, 2003) were administered. During the data collection period of 2016 and 2017, WISC-R was used. Later on, the procedure was changed to use the latest edition. WISC-IV was adapted to Turkish by Öktem and colleagues with a large standardization sample in 2011, and it is one of the mostly used intelligence scales for children aged 6-16. WISC-R and WISC-IV have the same factor structure, even though some subtests and items were changed in WISC-IV. Although the later edition was proved to be more reliable in terms of identifying different clinical profiles, previous studies have been shown to use the Full Scale IQ (FSIQ) scores obtained from both scales together (Mayes & Calhoun, 2006; Watkins et al., 2007).

One participant who volunteered to take part in the study was administered The Wechsler Abbreviated Scale of Intelligence, Second Edition (WASI-II; Wechsler, 2011), in order to facilitate administration. In WASI-II, two of the ten main subtests in the WISC-IV is administered to children: the Block Design subtest measuring Perceptual Reasoning and

the Similarities subtest measuring Verbal Comprehension. The WASI-II is reliably used in situations where administering all the subtests of the WISC-IV is not feasible or necessary (McCrimmon & Smith, 2013). In the current study, general intelligence scores were only needed as an exclusion criteria and control variable. Hence, it was decided that the use of WASI-II would be acceptable.

3.3. Procedure

In the data collection period from 2016-2023, Clinical Psychology Master Level Students from Istanbul Bilgi University administrated the procedure as part of their Clinical Training. Students were trained to administer the instruments. Families who applied for psychological assessment were invited to an intake session, where they were asked if they wanted to volunteer in the ongoing research at the Psychological Counselling Center. Parents who agreed signed a written consent form and another consent form for video and audio recording. Oral consent was also taken from children before testing. This research was previously approved by the Istanbul Bilgi University Ethics Committee.

Testing took place over two sessions at Istanbul Bilgi University Psychological Counseling Center. The sessions were scheduled on two separate days within a week. During testing, the child and the administrator were by themselves in a silent psychotherapy room within the center. Since data collection was part of a clinical practicum, students administered several other tests to the children as well. These additional tests included a Child Attachment Interview (CAI), the Thematic Apperception Test (TAT), and a short Play Assessment. The order of administration was as follows: CAI, the H-T-P test, TAT, ASCT, and Play Assessment. Intelligence tests were administered during the second session. The first session lasted approximately an hour, while intelligence testing lasted for two to three hours depending on the child's performance. In-between sessions, parents were asked to fill out the CBCL and several other scales.

Procedure was different for voluntary participants who did not apply for psychological testing. Only one session was made with these children. Parents who volunteered to participate completed an online demographic form which consisted of the consent form and several questions to determine if the child fit the inclusion criteria. Afterwards, the researcher contacted the parents to schedule a testing session at the center. The researcher administrated the procedure to these children. While the child and the researcher was in a room for testing, the parents were asked to fill out the CBCL form. The order of administration was as follows: The WASI-II, the H-T-P and ASCT. Testing took approximately an hour. The procedure was audio and video recorded with consent from both the parents and the child.

For the administration of the H-T-P test, the child and the administrator sat across each other on a table. Four A4-sized white papers and two pencils were used in the procedure. Eraser or colored pencils were not provided. If the child asked for an eraser, they were told that there were no erasers and they could cross out the part they wanted to erase instead. Initially, the administrator told the child that he/she would want the child to draw some pictures next. Then, putting one piece of paper and one pencil in front of the child, he/she asked the child to "draw a house". After the child finished drawing, the administrator asked the PDI questions related to the house. Then, the child was asked to "draw a tree". After the drawing was finished, PDI questions about the tree were asked. Thirdly, the child was asked to "draw a whole person, not a stick figure". After the child finished the drawing, PDI questions about the person were asked. Lastly, the child was told "you drew a … (the gender the child drew first), now draw a whole … (the opposite gender) and do not draw a stick figure". PDI questions about the person were asked a second time for the second person, after the child finished drawing.

For the ASCT, the administrator and the child kept sitting across each other. For each story, the administrator kept the testing materials out of sight and only put the materials related to the current story on the table. The administrator acted out each story by reading the manual, using dolls. After telling each story, the child was asked "Now what happens next?". They were free to move the dolls on the table if they wanted. In the end of each

story, the administrator asked the child (1) What the child thought, and (2) What the child felt. A boy doll was used for male participants, whereas a girl doll was used with females.

In the coding process, drawings were scored first in order to be blind to participants' attachment category or MST scores. When scoring person drawings, the person in the same gender as the participant was scored first, as Person 1. The person drawing in opposite-gender was scored later, as Person 2. Then, each participant's ASCT narrative was coded in terms of attachment security, attachment prototypes and MST. Coders other than the researcher were blind to study conditions. As mentioned, approximately half of the drawings were scored by a Master's student, while a very small portion of MST was coded by another Master's student. During the H-T-P scoring, coders were provided with information about the participant's gender, in order to determine which person drawing should be scored first. When coding attachment and MST, coders did not know any information regarding the participant other than what was revealed in their ASCT narrative. Coders other than the researcher were provided only with their portion of the data, in other words, they did not have access to the whole data. The student who coded MST were only provided with transcripts of ASCT procedures. If needed, videos of the procedures were only watched by the researcher. The student who scored the drawings, in turn, was only provided with drawings and gender information. Participants' initials and ID numbers were used throughout the coding process.

RESULTS

4.1. Descriptive Statistics

Attachment Security. According to their ASCT narratives, 64.7% (*n* = 55) of participants were insecurely attached, while 20% (*n* = 17) were coded as fairly secure and 15.3% (*n* = 13) as secure. Avoidant prototype (43.5%, *n* = 37) was the most frequently coded predominant prototype, while 22.4% (*n* = 19) of participants were coded as secure, 21.2% (*n* = 18) were coded as ambivalent and 12.9% (*n* = 11) were coded as disorganized. While 22% (*n* = 9) of females were coded in the secure prototype, only 9% (*n* = 4) of males were coded as secure.

Mental State Talk. In their ASCT narratives, participants used 416 words on average (*SD* = 294.27). Among these words, 34.22 on average were mental state words (*SD* = 18.24). Among categories C1-C5, Perception-based MST (C3) were used the least (*M* = 2.92, *SD* = 4.45) and Emotion-based MST (C1) were used the most (*M* = 9.24, *SD* = 6.15). Descriptive information related to MST scores are presented in Table 3.1.

House-Tree-Person Test. Participants' average Total H-T-P score was 26.94 (*SD* = 6.14), out of a maximum total score of 80. When categories were separately investigated, it was seen that *negative facial expressions* were observed the least among the categories (*M* = .33, *SD* = .66) followed by *bizarre items* (*M* = .61, *SD* = .97). Meanwhile, the *size* category was scored the highest compared to other categories (*M* = 5.49, *SD* = 1.63). In proportion to the maximum score that can be obtained, children obtained the highest scores in their tree drawings (*M* = 6.05, *SD* = 1.75). These findings indicate that on average, the highest number of emotional indicators were observed in children's tree drawings, mostly regarding the size of drawings. Further information related to H-T-P scores are presented in Table 3.2.

Table 4.1. Descriptive Statistics For Children's Attachment And Mental State Talk Variables

Attachment	*n*	*%*	*Min.*	*Max.*	*M*	*SD*	Skewness	Kurtosis
Secure	55 (32)*	64,7						
Fairly Secure	17 (8)	20						
Inecure	13 (4)	15,3						
Secure Prototype	19 (5)	22,4						
Avoidant Prototype	37 (22)	43,5						
Anxious Prototype	18 (8)	21,2						
Disorganized Prototype	11 (9)	12,9						
MST								
Total Mental State Words			9	106	34,22	18,24	1,23	2,45
Total Self (story)**			5	73	22,05	11,90	1,18	3,01
Total Other (story)			0	26	6,74	6,22	1,34	1,14
Total Causal			0	8	1,93	2,18	1,22	0,81
Total Unique			6	38	17,61	7,71	0,58	-0,35
Total Self			0	14	1,09	2,14	3,55	16,77
Total Other			0	4	0,13	0,53	5,55	35,78
Situational Total			0	4	0,31	0,67	3,15	12,57
Opacity Total			0	8	0,39	1,26	4,66	23,83
Inappropriateness Total			0	27	1,92	4,51	3,56	14,43
Total Emotion			0	24	9,24	6,15	0,45	-0,63
Total Cognition			0	16	5,00	4,19	0,85	0,03
Total Perception			0	33	2,92	4,45	4,23	25,04
Total Physiological			0	22	6,84	4,95	1,05	0,70

Total Action-based	0	25	6,33	5,72	1,64	2,63
Total Words	27	1825	416,07	294,27	2,20	6,84

Note. * Number of males are shown in bracets. ** There are two kinds of self and other-related MST. The former on the list includes MST referring to characters in the stories of children while the latter includes MST related to the child or an other. Total Unique refers to the number of unique mental state words used by the child.

Table 4.2. Total and Category H-T-P Scores

Categories (Max. Possible Score)	*Min.*	*Max.*	*M*	*SD*	Skewness	Kurtosis
Light Lines Total (4)	0	4	0,51	0,895	2,178	4,976
Heavy Lines Total (4)	0	4	2,79	1,292	-0,849	-0,397
Interrupted Lines + Chaotic Lines + Shading Total (12)	0	9	2,47	1,992	0,832	0,621
TOTAL Line Quality (20)	0	13	5,76	2,706	0,351	-0,041
Small figure total (8)	0	8	3,09	2,515	0,42	-1,001
Large figure total (8)	0	8	2,4	2,237	0,736	-0,279
TOTAL Size (8)	0	8	5,49	1,63	-0,589	0,411
Simplified + Stick + Sign. Omissions Total (16)	0	16	4,25	3,415	0,86	0,682
Detailed figure total (8)	0	8	2,66	2,196	0,69	-0,418
TOTAL Detail (24)	3	16	6,91	2,379	0,946	1,785
TOTAL Distortion (16)	1	16	5	2,22	1,29	5,831

TOTAL Negative Expression (8)	0	3	0,33	0,662	2,299	5,501
TOTAL Location (8)	0	8	2,92	2,316	0,644	-0,292
TOTAL Bizarre Items (4)	0	4	0,61	0,965	1,67	2,46
TOTAL HOUSE (17)	2	14	5,93	1,85	1,087	3,796
TOTAL TREE (17)	3	12	6,05	1,745	0,546	0,568
TOTAL PERSON (46)	4	30	14,98	4,296	0,364	0,987
TOTAL PERSON 1 (23)	1	13	7,55	2,119	0,055	0,434
TOTAL PERSON 2 (23)	3	17	7,48	2,501	0,672	1,57
TOTAL H-T-P (80)	16	56	26,94	6,138	1,178	4,717

4.2. Data Analysis

Analysis was executed using IBM SPSS Version 25. In order to explore the nature of the relationship between attachment security, MST and H-T-P scores while controlling for age, gender, intelligence and problem behaviors of participants, linear multiple regression analysis was utilized. Prior to the regression analysis, Pearson correlation coefficients were obtained between total H-T-P scores and the possible confounding variables, attachment security and total MST. Out of age, gender, intelligence and problem behaviors, only the covariates which were significantly correlated to H-T-P were included in the Regression model.

Differences between attachment prototypes in terms of H-T-P item totals were analyzed using Analysis of Covariance. Age, intelligence and total problem behavior scores were entered as covariates. Finally, differences between prototypes were also explored within each item on the H-T-P manual. Chi-square analyses were conducted for this purpose.

4.3. Hypothesis Testing

Initially, the relationship between total H-T-P scores and possible confounds were analyzed. It was revealed that total H-T-P scores were negatively correlated with intelligence on a significant level, $r(83) = -.309$, $p = .009$. Age and total problem behavior scores, however, were not significantly related to total H-T-P, $r(83) = -.137$, $p = .21$ and $r(83) = .177$, $p = .11$ respectively. In order to find out if total H-T-P scores differed significantly between males and females, an independent samples t-test was conducted. According to the result of this test, males ($M = 28.75$, $SD = 6.41$) obtained significantly higher total H-T-P scores compared to females ($M = 25.00$, $SD = 5.24$), $t(83) = 2.94$, $p = .004$. Following these results, only gender and intelligence were entered as control variables in hypothesis testing.

Preliminary Pearson Product-Moment Correlations revealed that there was a significant negative correlation between attachment security and total H-T-P scores, $r(83) = -.22$, $p = .045$. Attachment security was also significantly correlated with total Person scores, $r(83) = -.32$, $p = .003$. House and Tree scores were not found to be significantly related to attachment security (both p's $> .05$). Total Mental State Talk was not found to be significantly correlated with total H-T-P [$r(83) = -.09$, $p = .42$] or House, Tree or Person specifically (all p's $> .05$).

In order to see if attachment security was a significant predictor of total H-T-P scores independent of gender and intelligence, a multiple regression analyses was conducted. There were no dependence of errors. The listed predictors together accounted for 16% of the variance in total H-T-P scores, which was found to be significant [$F(3,81) = 5.28$, $p = .002$]. However, analysis of coefficients revealed that attachment security was not a significant predictor of total H-T-P scores on its own, $t(84) = -1.51$, $p = .14$. In summary, hypotheses 1 and 2 could not be supported in the current study. Although there was a significant negative relationship between attachment security and total H-T-P, attachment security had weak predictive value over total H-T-P scores. Moreover, the relationship between total MST and total H-T-P was non-significant.

The third hypothesis of the current study was that the four attachment prototypes significantly differed in their total H-T-P scores. In order to test this third hypothesis, Analyses of Covariance (ANCOVA) were conducted between H-T-P scores of different attachment prototypes. Gender and intelligence were controlled. The results revealed that total H-T-P scores of secure, avoidant, anxious and disorganized participants did not differ meaningfully, $F(3, 3.07) = 3.11$, $p = .19$. The third hypothesis could not be supported as well.

4.4. Exploratory Analyses

In this section, category and item-based relationships between H-T-P and attachment security, MST categories and attachment prototypes will be further explored. For this purpose, partial correlation analyses were conducted between category scores of H-T-P and attachment security & MST categories. The results of these analyses are presented below.

Prior to analysis, the normality of the data was checked. Skewness and kurtosis values were mostly between -2 and +2, therefore, a relatively normal distribution of the dataset was assumed (George & Mallery, 2010), except for some of the H-T-P and MST categories (*see* Tables 5 & 6 and Appendices C & D). For the analysis of those categories, Spearman's rank correlation coefficients were calculated instead of Pearson's.

The results revealed that controlling for age, gender, intelligence and total problem behaviors, attachment security was significantly correlated with total detail scores, and *simplified* scores in particular, $r(65) = -.42$, $p = .00$ and $r(65) = -.36$, $p = .003$. Since this score was a combination of simplified figure, stick figure and significant omission scores, these three subcategories were independently analyzed as well. The results showed that attachment security was negatively correlated with all three of these scores on a significant level, $r(65) = -.25$, $p < .05$, $r(65) = -.31$, $p < .05$ and $r(65) = -.31$, $p < .01$ respectively. Attachment security also had a significant negative relationship with total Person scores, $r(65) = -.32$, $p = .01$. Lastly, total Location scores had a positive

relationship with attachment security, which indicates that more securely attached children drew more off-centered drawings, $r(65) = .27$, $p = .03$. All correlations related to attachment security are presented in Table 3.3.

When the relationship between total MST and H-T-P categories were explored, it was found that *small figure* scores had a significant negative relationship between total MST, $r(65) = -.25$, $p = .04$. In other words, children who used more MST drew less smaller figures. Meanwhile, *detailed figure* scores positively correlated with total MST on a significant level, $r(65) = .29$, $p = .02$. This indicates that children who used more MST included more details in their drawings. All correlations related to total MST are presented in Table 3.4.

When MST categories were separately analyzed, it was found that multiple categories within MST scores were significantly related to size, overall detail, disortions, bizarre items and negative facial expressions. Self-related (story) and cognition-based MST were found to be significantly correlated with *small figure,* $r(65) = -.28$, $p = .02$ and $r(65) = .27$, $p = .03$. While self-related (story) MST had a negative relationship with *small figure,* cognition-based MST had a positive relationship, such that higher cognition-based MST were related to smaller drawing size. *Detailed figure* scores were found to be significantly positively correlated with self-related (story), causal and unique MST, $r(65) = .33$, $p = .01$, $r(65) = .26$, $p = .03$ and $r(65) = .27$, $p = .03$. The amount of inappropriate MST was positively correlated with Total Bizarre Item scores, indicating that children who drew more bizarre items used more inappropriate mental state words, $r(65) = .25$, $p = .04$. Finally, *large figure* scores were negatively correlated with Action-based MST, namely, children who drew larger figures used less action-based MST in their narratives, $r(65) = -36$, $p = .003$. All correlations are presented in Appendix C and Appendix D.

Table 4.3. Partial Correlations Between H-T-P And Attachment Security

H-T-P Categories		
TOTAL Line Quality	Pearson Correlation	-0,23
	Sig. (2-tailed)	0,06
Light Lines Total	Spearman Correlation	-0,11
	Sig. (2-tailed)	0,39
Heavy Lines Total	Pearson Correlation	-0,21
	Sig. (2-tailed)	0,09
Interrupted Lines + Chaotic Lines + Shading Total	Pearson Correlation	-0,14
	Sig. (2-tailed)	0,27
TOTAL Size	Pearson Correlation	0,09
	Sig. (2-tailed)	0,45
Small figure total	Pearson Correlation	0,16
	Sig. (2-tailed)	0,21
Large figure total	Pearson Correlation	-0,11
	Sig. (2-tailed)	0,37
TOTAL Detail	Pearson Correlation	-0,42
	Sig. (2-tailed)	**0,000****
Simplified + Stick + Omission total	Pearson Correlation	-0,36
	Sig. (2-tailed)	**0,003****
Detailed figure total	Pearson Correlation	0,08
	Sig. (2-tailed)	0,52
TOTAL Distortion	Spearman Correlation	0,02
	Sig. (2-tailed)	0,89
TOTAL Negative Expression	Spearman Correlation	-0,01
	Sig. (2-tailed)	0,92
TOTAL Location	Pearson Correlation	0,27
	Sig. (2-tailed)	**0,03***
TOTAL Bizarre Items	Pearson Correlation	-0,17
	Sig. (2-tailed)	0,16
TOTAL HOUSE	Spearman Correlation	0,11
	Sig. (2-tailed)	0,37
TOTAL TREE	Pearson Correlation	-0,08
	Sig. (2-tailed)	0,51
TOTAL PERSON	Pearson Correlation	-0,32
	Sig. (2-tailed)	**0,008****

Note. * $p < .05$. ** $p < .01$.

Table 4.4. Partial Correlations Between H-T-P And Total MST

H-T-P Categories		
TOTAL Line Quality	Pearson Correlation	0,02
	Sig. (2-tailed)	0,90
Light Lines Total	Spearman Correlation	0,06
	Sig. (2-tailed)	0,61
Heavy Lines Total	Pearson Correlation	-0,03
	Sig. (2-tailed)	0,81
Interrupted Lines, Chaotic Lines, Shading Total		0,03
	Pearson Correlation	
	Sig. (2-tailed)	0,83
TOTAL Size	Pearson Correlation	-0,19
	Sig. (2-tailed)	0,13
Small figure total	Pearson Correlation	-0,25
	Sig. (2-tailed)	**0,04***
Large figure total	Pearson Correlation	0,14
	Sig. (2-tailed)	0,24
TOTAL Detail	Pearson Correlation	0,10
	Sig. (2-tailed)	0,41
Simplified + Stick + Omission total	Pearson Correlation	-0,14
	Sig. (2-tailed)	0,27
Detailed figure total	Pearson Correlation	0,29
	Sig. (2-tailed)	**0,02***
TOTAL Distortion	Spearman Correlation	0,05
	Sig. (2-tailed)	0,68
TOTAL Negative Expression	Spearman Correlation	-0,23
	Sig. (2-tailed)	0,07
TOTAL Location	Pearson Correlation	-0,04
	Sig. (2-tailed)	0,77
TOTAL Bizarre Items	Pearson Correlation	0,04
	Sig. (2-tailed)	0,73
TOTAL HOUSE	Spearman Correlation	-0,02
	Sig. (2-tailed)	0,90
TOTAL TREE	Pearson Correlation	0,19
	Sig. (2-tailed)	0,13
TOTAL PERSON	Pearson Correlation	-0,11
	Sig. (2-tailed)	0,38

Note. *$p < .05$.

In order to explore the differences between attachment prototypes in terms of specific H-T-P categories, Analysis of Covariance was utilized. Results revealed that attachment prototypes significantly differed in terms of Total Detail, $F(3,60) = 3.279$, $p = .03$, $\eta 2 = .141$. According to post-hoc analysis, anxious children had significantly higher Total Detail scores than children in the secure prototype, $p = .02$.

A second approach to compare the prototypes was to conduct Chi-Square tests for each item on the H-T-P manual in order to see if there were any item-based differences. The results are as follows:

In person drawings, *neck*s were drawn more often by secure children [χ^2 (3, $N = 85$) = 9.721, $p < .02$], *stick figures* were drawn more often by avoidant and disorganized children [χ^2 (6, $N = 85$) = 19.56, $p = .003$], *disconnected lines* were drawn more often by disorganized children [χ^2 (6, $N = 85$) = 24.40, $p = .000$], *significant omissions* were observed more often in avoidant and disorganized children [χ^2 (3, $N = 85$) = 9.15, $p = .03$], and lastly, *detailed person* were observed more often in anxious children, χ^2 (6, $N = 85$) =15.52, $p = .02$.

In tree drawings, it was seen that: *detailed tree* was observed more often in secure and anxious children [χ^2 (6, $N = 85$) = 17.055, $p = .01$] and *disconnected lines* were drawn exclusively by avoidant and disroganized children [χ^2 (6, $N = 85$) = 15.047, $p = .02$]. In addition, the canopy of the tree was omitted exclusively in avoidant and disorganized children's drawings, χ^2 (3, $N = 85$) = 8.92, $p = .03$.

Finally, in house drawings, it was found that *chaotic lines* were exclusively not drawn by secure children [χ^2 (3, $N = 85$) = 7.90, $p = .048$], the *location* of the house was more off-centered in the drawings of secure and avoidant children [χ^2 (6, $N = 85$) = 12.91, $p = .04$], and *bizarre house* was observed more often in disorganized and anxious children [χ^2 (3, $N = 85$) = 13.49, $p = .004$]. Overall, these exploratory findings suggest that different attachment prototypes had several different drawing characteristics.

DISCUSSION

In the current study, associations between attachment, mentalization and children's House-Tree-Person drawings were explored. Children's H-T-P drawings were scored using a novel scoring manual developed in this study to respond to the gap in the literature regarding the quantitative interpretation of the test, especially with Turkish children. There were also a very limited number of studies which controlled the effect of possibly confounding variables such as age, gender, and intelligence levels in particular. For this purpose, relationships between children's H-T-P scores, attachment security, attachment styles and mentalization capacity, operationalized by Mental State Talk, were analyzed controlling for age, gender, intelligence and problem behaviors.

The first hypothesis of the study was that higher attachment security would predict lower total H-T-P scores, i.e., less problematic drawing characteristics in total. The second hypothesis was that higher MST scores would similarly predict lower total H-T-P scores. Lastly, it was hypothesized that there would be significant differences between total H-T-P scores of children belonging to different attachment prototypes. Analysis revealed that total H-T-P scores were not significantly predicted by neither attachment nor MST, independent from the control variables. Therefore, the hypotheses of the study could not be supported regarding total scores. However, further analysis showed that there were several dimensions of H-T-P drawings which were significantly related to attachment security, attachment styles and MST. In the next sections, these results will be discussed, using several drawing examples. Then, possible clinical implications, limitations and suggestions for future studies will be discussed.

5.1. Discussion Of Findings

5.1.1. Attachment Security and H-T-P Drawings

According to the study results, attachment security was negatively correlated with total H-T-P scores, yet, it was not a significant predictor. Concordant with this finding, previous studies had rarely calculated total H-T-P scores (*see* Guo et al., 2023). This is why, one of the goals of the current research was to examine children's drawings as a whole. The results, however, revealed that total H-T-P scores may not be as conclusive or explanatory as specific category scores. This might be due to the fact that drawing characteristics are difficult to combine in scorable terms, since each drawing characteristic is related to different dimensions of the self. Nevertheless, there are several studies combining different drawing categories, such as the HFD scoring system of Koppitz (1968), whose total scores have yielded valid and meaningful results (*see* Çelik, 2018). Then, it might simply be concluded that attachment security is not a significant determinant of H-T-P characteristics as a whole. It was seen that intelligence and gender were more significant predictors of total H-T-P scores. Since the H-T-P test was initially developed to measure intelligence (Buck, 1948; Machover, 1949), the fact that a significant relationship was found between intelligence and total H-T-P is supportive of the concurrent validity of the newly developed H-T-P scoring manual.

Category scores could explain the relationship between attachment security and H-T-P drawings better. According to the exploratory analysis, less securely attached children had less details, more significant omissions and more one-dimensional body parts in their drawings. This finding supports the results obtained by Rosen and colleagues (2023). They had found a marginally significant relationship between attachment quality and content scores of family drawings made by an inpatient sample ($p = .061$). Only age was controlled in their analysis. As previously mentioned, content scores referred to the richness of content in children's drawings, and had items such as *number of figures, size, completeness* and *interest in details.* These items strongly resemble the items in the current study which were found to be significantly related to attachment security. Along

with replicating these results with H-T-P drawings, the current study also controlled other variables such as intelligence and gender, and still reached significant results.

Similar to Rosen and colleagues' study, in Kaplan and Main's (1985) attachment classification system based on family drawings, lack of detail and incomplete figures indicate insecure-avoidant attachment. The current study obtained similar results. Fury and colleagues' (1997) revision of this classification system also includes global rating categories, which refer to the general impression a drawing gives. The results of the current study supported the relationship between drawings and some of the global rating categories, but not all. For instance, a global rating called vulnerability, which refers to proportion, size and distance-related issues in family drawings, is suggested to indicate insecure attachment. However, distortions and size were not found to be significantly related to attachment security in the current study. Similarly, inclusion of bizarre items was not related to attachment, although it was regarded as a sign of insecure attachment in Fury and colleagues' (1997) classification. Since this classification system is used for the interpretation of family drawings, it might be expected that distortions and bizareness in children's family depictions reflect actual 'distortions and bizareness' in familial roles and relationships. Nevertheless, the nature of this relationship could still be observed in the detail levels of children's more ambiguous drawings, such as the H-T-P.

In fact, there is another global rating category called vitality, which refers to the "*emotional investment in drawing reflected in embellishment, detail, and creativity*" (Fury et al., 1997, p. 1157). Current findings about detail levels can also be interpreted as features of vitality. Thus, it may be said that the effect of attachment security on H-T-P drawings could be observed most apparently in their vitality. It may be that attachment security could have affected children's investment and creativity during the drawing test, which was reflected in detail levels and omissions.

Insecure attachment patterns are formed within an insecure primary relationship, where the child does not have a trusted, secure base to be able to explore their environment (Fonagy et al., 2012). A drawing task, and any other projective task, is mainly a task of exploration: one which requires the individual to explore and describe what is within. Hence, it might be hypothesized based on the current results that securely attached

children are able to describe their mental representations in a more enriched and complex manner compared to insecurely attached children, whose drawings tend to be blunt and limited in detail. In fact, it was previously suggested that children with insecure attachment, especially avoidantly attached children, were less visually creative than children with secure attachment (Alptekin et al., 2023).

Attachment security was also negatively correlated with total Person scores, but not House or Tree scores. Person drawings have more details and characteristics compared to house or tree drawings. For instance, a higher amount of significant omissions were made in person drawings compared to tree or house drawings. Moreover, stick figures, which was found to be related to attachment security, could only be observed in person drawings. Hence, it can be said that person depictions of children were affected by their internalized working models more than house or tree drawings. Although drawings about home and family were expected to reveal attachment-related characteristics, house drawings alone were not significantly related to attachment security in the current study (Kaiser, 1996).

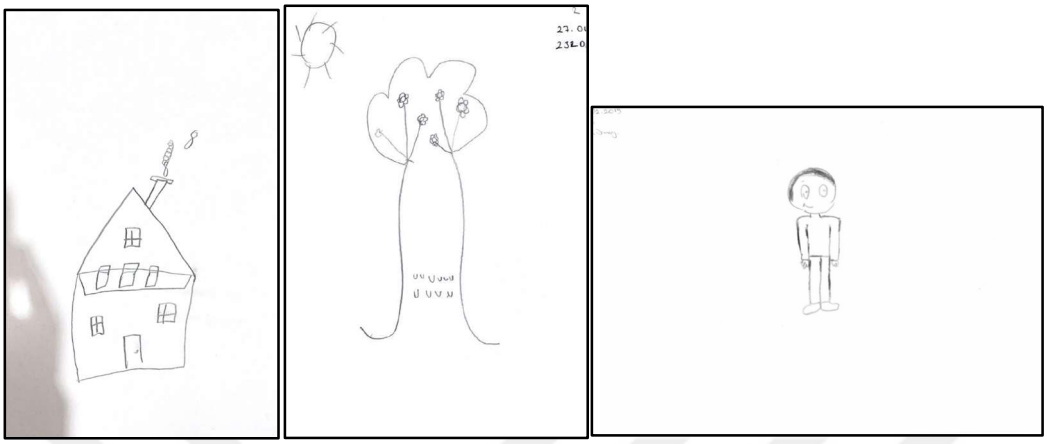
Lastly, it was revealed in the analysis that securely attached children made more off-centered drawings. An opposite relationship was initially expected, since off-centered drawings were considered to reflect dependency and need for support (Burns & Kaufman, 1972; Li et al., 2011). Except when the drawing is quite obsessively located right at the center, it might be a sign of insecurity, rigidity, anxiety and obsessive tendencies (Machover, 1949; Buck, 1948; Burns, 1987). Nevertheless, in a qualitative study about H-T-P drawings and attachment security, it was found that images drawn near the right side of the paper was a sign of secure attachment, more specifically, stability and control (Gilbert, 2015). Moreover, according to Kaplan and Main's (1985) scroing system, 'floating' figures which were not grounded are a sign of insecure attachment. It might be that some of the figures which were at the center of the paper could coincidentally be floating at the same time, although this characteristic was not specifically measured. In short, even if the results of the current study resemble previous findings about attachment and H-T-P, it contradicts with theoretical accounts where off-centered drawings are considered as negative emotional indicators.

5.1.2. Attachment Prototypes and H-T-P Drawings

As suggested by the findings, children with different attachment styles differed in terms of overall detail levels. More specifically, securely attached children had less overall detail scores than anxiously attached children. As mentioned, overall detail scores refer to deviations from a usual amount of detail, i.e., both very simplified and excesivelly detailed drawings would result in a high overall detail score. Thus, it can be said that children with a secure attachment style included a usual amount of details in their drawings, as opposed to anxiously attached children, who were scored the most unusal in terms of detail level. This finding supports both theoretical accounts and previous findings about anxious attachment. In family drawings and H-T-P, anxious attachment had been found to be manifested by an excessive detail level, crowded and overlapping figures, unusual size and exaggerated facial feaures (Fury et al., 1997; Procaccia et al., 2014; Gilbert, 2015).

The current study also made item-based comparisons of attachment styles, which revealed several significant differences. These differences will be discussed with drawing examples which can be seen in Figures 4.1 - 4.4.

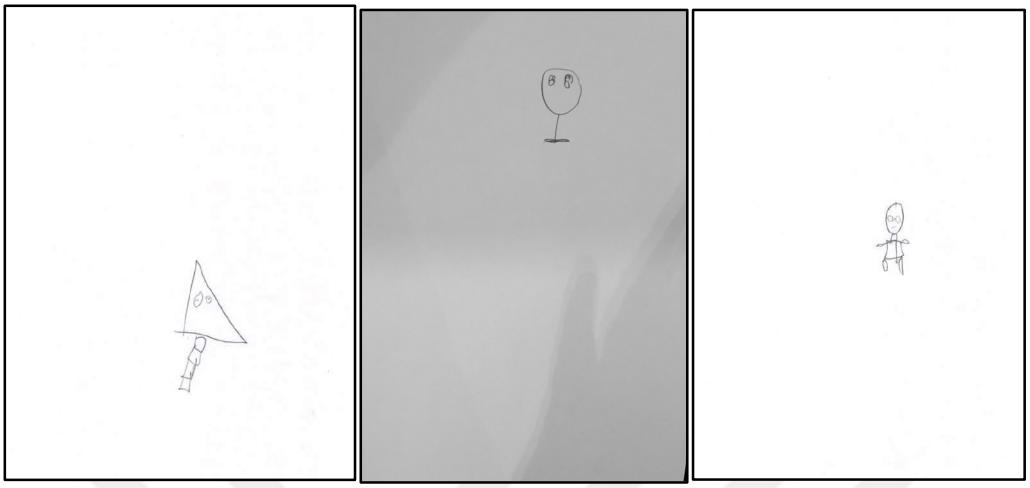
Figure 5.1. Drawings of Securely Attached Children



Note. The house is made by a 7-year-old male with a total MST score of 41. The tree is made by a 9-year-old male with a total MST score of 28. The person is made by a 10-year-old female with a total MST score of 106.

The drawings in figure 3 are made by securely attached children. All drawings seem usual in terms of size and proportions, except for the tree which is a bit large. There are no significant omissions in any of the drawings. As suggested by the study results, these drawings also seem to have a normal amount of details. They are embellished with some unique details, such as the balcony of the house, the sun and flowers on the tree and the fingers and eyebrows of the person. However, these details are not excessive. In general, all of these drawings have a positive and lively tone, emphasized by the smoke coming out of the chimney, the flowers growing on the tree and the smiling person.

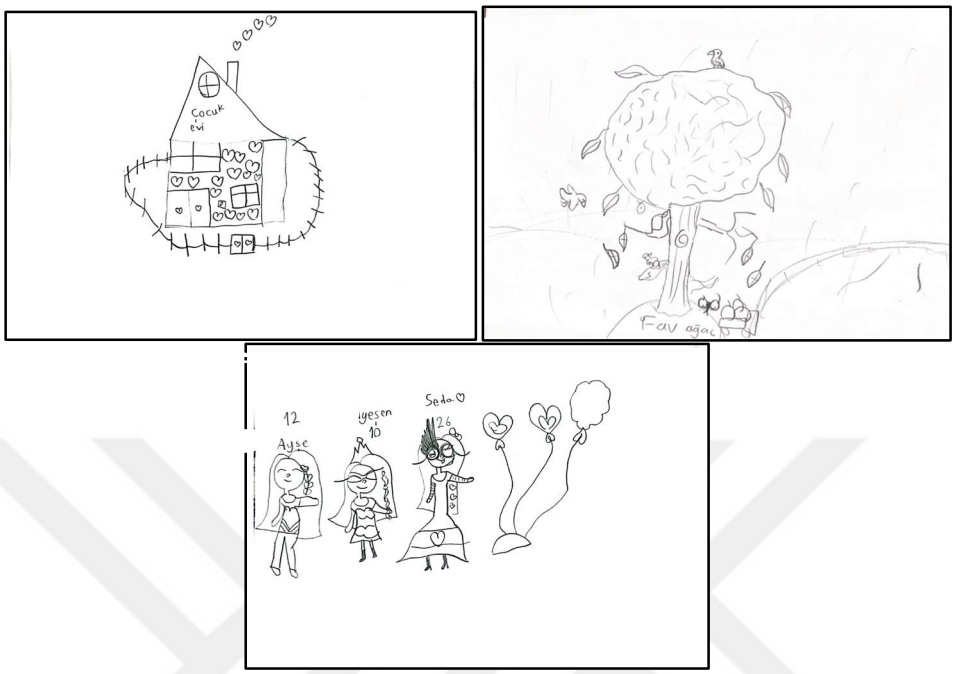
Figure 5.2. Drawings Of Avoidantly Attached Children



Note. The house and person are made by a 10-year-old male with a total MST score of 18. The tree is made by a 7-year-old male with a total MST score of 11.

The drawings in figure 4 are strikingly different from the previous ones. Avoidant children are thought to have primary caregivers who are insensitive and rejecting to their needs, which makes it difficult for them to be aware of their own mental states (Ainsworth & Bowlby, 1991; Stevens, 2014). This difficulty results in withdrawal and denial of emotions, which might be reflected in these drawings by small size, omissions and simplicity. The bottom part of the house- where actual living occurs, is excessively underemphasized. There are also no doors. The trunk of the tree is too thin to carry itself, while the crown is drawn with no texture or detail. Lastly, the person has no hands or feet, both of which enable us to perform an action. It also has a nearly blank face, with light pressure, no eyeballs and no facial expression. Findings of the current study revealed that drawings of avoidant children had more significant omissions and disconnected lines compared to secure and anxiously attached children. Previous findings also suggest that small and simplified figures and lack of individuation are markers of avoidant attachment in drawings (Fury et al., 1997; Gilbert, 2015).

Figure 5.3. Drawings Of Anxiously Attached Children

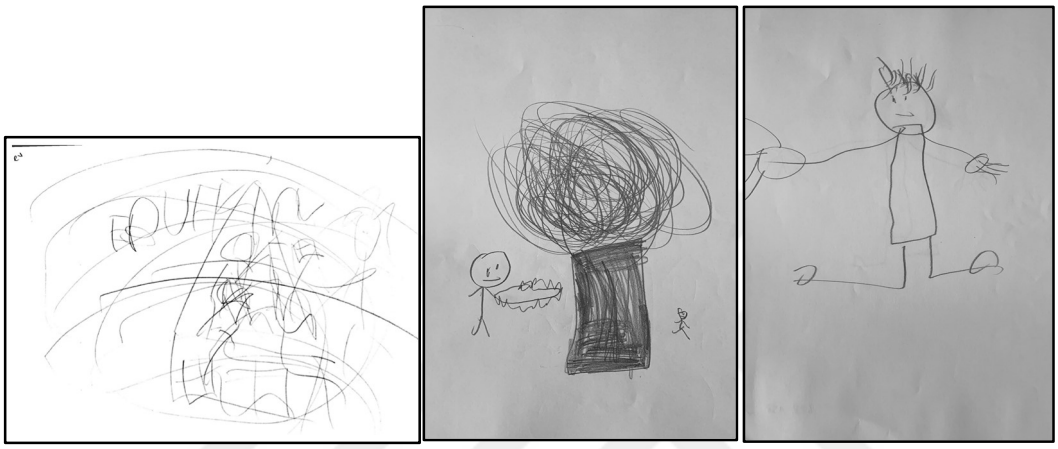


Note. The house and person are made by a 7-year-old female with a total MST score of 41. The tree is made by a 12-year-old male with a total MST score of 36.

The most striking feature of the drawings in figure 5 is their detail level. These drawings feel crowded. As suggested by the findings, anxiously attached children added more details in their drawings. This is also what previous studies have found (Fury et al., 1997; Gilbert, 2015; Procaccia, 2014). Caregivers of anxiously attached children respond to their needs inconsistently. As a result, these children are in constant conflict: they become disturbed by the caregiver's absence but cannot be soothed after their return (Ainsworth & Bowlby, 1991). This conflict is interestingly evident in these drawings. In the house, although the hearts within the house seem welcoming, the sharp fences surrounding the house suggests the opposite. In the tree, it is raining and the leaves of the tree are falling, all the while a mother bird is trying to fly towards its baby. The girls in the person drawing are embellished with feminine details and hearts. Nevertheless, the eyes of the figures are all closed, and the figure at the center is wearing a large mask that covers half her face. These drawings convey multiple emotions at once, revealing the inner workings of anxiously attached children, who cannot decide whether to approach or avoid the

caregiver. In line with these drawings, the current study revealed that bizarre and hostile items such as the sharp fences were exclusively observed in the drawings of children with anxious or disorganized attachment.

Figure 5.4. Drawings Of Disorganized Children



Note. The house is made by a 7-year-old male with a total MST score of 58. The tree and the person are made by an 8-year-old male with a total MST score of 13.

Finally, drawings made by disorganized children are, as previously found, distinguishably more chaotic (Madigan et al., 2004). As such, disorganized attachment patterns are characterized by inconsistency and lack of organization (Ainsworth & Bowlby, 1991). These drawings convey a sense of hostility, unsafety, and lack of boundaries, which children with disorganized attachment, who do not have a stable coping strategy against possibly threatening events, might be experiencing. The house drawing covers the whole paper, yet it is hard to tell where the house begins or ends. The person is mostly a stick-figure, which was observed exclusively in the drawings of avoidant and disorganized children in the current study. The person also has no details for individuation, and no neck in particular. In fact, the body and the head are drawn on top of each other, which might reflect issues regarding inner balance and boundaries. In the current study, necks were drawn less often by disorganized children. This finding had not been reached before. As mentioned, bizarre houses were observed more often in anxious and disorganized children's drawings. Lastly, the tree has chaotic lines and a shaded trunk. In the current

study, it was found that chaotic lines were exclusively not observed in children belonging to the secure prototype. More remarkably, a figure with a chainsaw is drawn approaching the tree. Caregivers of disorganized children not only fail to respond to the child's needs, but they are likely to engage with them in a hostile manner (Fonagy et al., 2002). This drawing of a tree managed to capture what it is like to grow up in such a hostile environment.

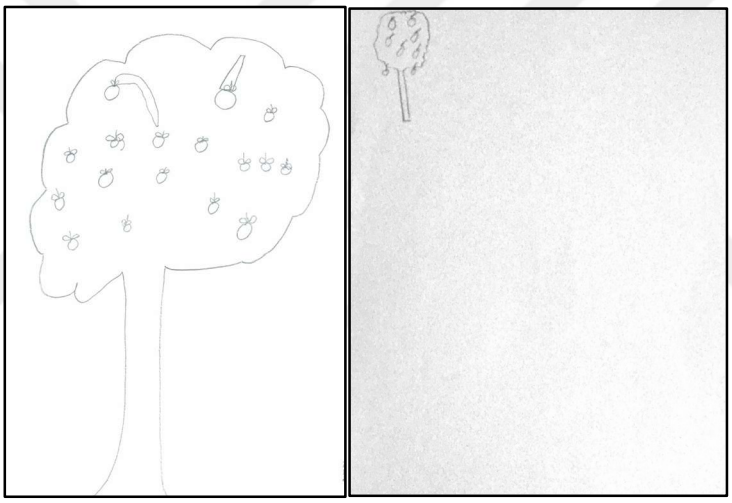
In conclusion, much like family drawings, H-T-P drawings revealed striking differences between attachment styles. Mainly, while securely attached children made more realistic and usual drawings, avoidantly attached children made more simplified and incomplete drawings, anxiously attached children made more detailed and emotionally conflictual drawings, and lastly, disorganized children made more bizarre and chaotic drawings. The H-T-P scoring manual could capture these differences, most apparently in detail levels. This indicates that the use of the manual could aid in understanding and differentiating between attachment styles.

5.1.3. Mental State Talk and H-T-P Drawings

The current study explored the relationship between mental state talk and H-T-P drawings, both of which can be regarded as means of expressing mental representations. There have been almost no previous studies examining this relationship. Thus, this study can be considered a significant addition to mentalization literature. According to the results, total MST scores were found to be in a significant negative relationship with *small figure* scores, whereas a positive relationship was observed with *detailed figure* scores. In other words, children using less mental state words made more unusually small drawings, while children using more mental state words made more detailed drawings. These relationships were observed specifically in self-related MST rather than other-related MST. Since drawings are considered to be self-representations, this finding was expected. From these results, it can be suggested that drawings of a house, a tree and a person are affected by children's capacity to reflect upon their own mental states.

The results of this study partially support Rosen and colleagues' (2023) findings about MST. In their study, both the content and formal elements within children's family and caregiver drawings were found to be related to total MST and emotion-based MST. Size and object details were among the content and formal elements scales examined within family and caregiver drawings. However, formal elements scales also included items about line quality, which was not found to be significantly related to MST in the current study.

Figure 5.5. Tree Drawings Of Children With Different Total MST Scores



Note. These drawings are made by two 9-year-old females. Both were securely attached in the secure prototype. The total MST score of the child who made the first drawing is 44, while the other child's total MST score is 27.

As previously mentioned, problems about self-perception are reflected in small drawing size (Kwark & Lee, 2010). Small person drawings have also been connected with low self-awareness (Meehan, 1968). The current study largely supports these accounts, since self-related mental state talk is mainly affected by self-awareness. It can be speculated that children who have poorer capacity to express their mental states also tend to express themselves on paper in a more limited space. In other words, their self-expressions occupy a smaller space on paper, just as they occupy a smaller space in verbal narratives.

Moreover, mentalization capacity develops in line with primary caregivers' capacity to mentalize their child's mental states, i.e., provide a space within their minds for the child's mind (Slade, 2005). In this sense, it is meaningful that a relationship has been found between children's MST and the space their drawings occupy on paper.

Total and self-related MST scores were also positively related to *detailed figure* scores, while attachment security was related to simplified drawings in a similar direction. This might indicate that whereas attahment insecurity reveals itself in the incompleteness and lack of vitality in drawings, higher levels of mentalization is reflected in more embellished, individuated drawings, which describe their mental states in a more complex and rich manner.

When MST categories are examined, it was found that higher levels of inappropriate MST was related to higher bizarre item scores. Bizarreness in family drawings has previously been linked with disorganized attachment (Kaplan & Main, 1985, Madigan et al., 2004), which was also observed in the house drawings of disorganized children in this study. Children with disorganized attachment are thought to have caregivers who are inconsistant and biased when reflecting upon their child's mental states (Fonagy et al., 2002). Moreover, their own mental states might be hostile towards the child, evoking anxiety and fear. In turn, the child becomes excessively sensitive to others' intentions and tend to make inaccurate attributions to these intentions. This is reflected in their use of inappropriate mental state words (Fonagy et al., 2002). The narratives of children who used a high amount of inappropriate mental state words generally involved violent punishments and death. Current findings suggest that children who used more inaproppriate MST also included more weird and hostile figures in their drawings. In other words, pseudo-mentalization states were also represented in children's H-T-P drawings. This finding is novel in the literature.

Another significant finding in the current study was that cognition-based MST was positively related to *small figure* scores, which is the opposite of the relationship found between total MST and *small figure*. As it was previously discussed, unusually small drawing size was linked to limited self-reflection capacity. Hence, this was an unexpected result, which was not observed Rosen and colleagues' study (2023). One possible

explanation might be that children who used a higher amount of cognitive mental state words did so as means of avoiding their emotions. Overreliance on cognition-based mental state words has been found to be linked to poorer tolerance of feelings and result in psychopathology, which might be related to small drawing size (Fonagy et al., 2002; Halfon et al., 2020). However, the current study did not reveal any significant associations with emotion-based MST, contrary to previous studies (Rosen et al., 2023).

Finally, the current study revealed that children who made more unusually large drawings used less action-based mental state words. Once again, this finding is novel in literature. Action-based mental state words mainly consist of actions which have a clear intention or feeling behind, contrary to verbs which only descibe a physical action, such as falling or running. Large drawing size has been associated with hyperactivity and aggression in theory (Buck, 1948; Machover, 1949; Burns, 1987). In a study examining mentalization capacity in adults with Attention-Deficit-Hyperactivity Disorder (ADHD), it was found that these individuals had a difficult time regulating their emotions before acting on them (Perroud et al., 2017). It might be speculated that children who used less action-based MST had a difficult time thinking about the intentions and feelings behind actions, which might have been reflected in large drawing size.

5.2. Research And Clinical Implications

This study provides empirical support for the use of the H-T-P test with children. It was seen that levels and variations within attachment and MST are reflected in children's H-T-P drawings, largely in terms of details and size. Lastly, although total H-T-P score was not a valid estimator of attachment security or MST, concurrent validity could be established in several category scores.

The utility of projective tests has been discussed by researchers for a long time. Projective tests are used contendly and popularly in clinical practice, and prove to be indispensable (Watkins et al., 1995). These tests enable individuals to reflect flexibly on their experiences. However, as a result, possible scorable answers are limitless. Furthermore,

they are evaluated by subjective interpretations, which sometimes results in inconclusive or contradictory results (Lilienfeld et al., 2000). This is why, developing more objective interpretation methods are suggested, which has been proven to increase the validity of drawing tests (Gilbert, 2015; Naglieri & Pfeiffer, 1992). As suggested, the current study evaluated the H-T-P test quantitatively by developing a manual with high reliability and good internal consistency. This manual has been an important standardization attempt which facilitated the interpretation of H-T-P drawings. In addition, the current study examined a Turkish sample and reached valuable results, offering a new assessment perspective of the H-T-P which can be used in Turkish clinical settings.

In psychotherapy processes with children and adults, attachment security and attachment styles are influential on therpeutic alliance and outcome (Slade & Holmes, 2019). Similarly, mentalization capacity of children in psychodynamic play therapy, as well as the mentalization capacity of their mothers, have been found to predict therapy outcome (Halfon & Beşiroğlu, 2021). Specific impairments and imbalances in mental state have also been linked to various behavioral problems (Halfon et al., 2020). For these reasons, efforts to develop and improve tools to assess attachment and mentalization in therapeutic settings have been highly valuable. Conversely, with children, conversations about mental states and relationships are difficult to make. This is why, assessing attachment security and mentalization capacity via children's other activities such as play or art might facilitate the therapeutic process. The current study revealed that the H-T-P test can be a helpful tool to make inferences about children's attachment security, attachment styles and capacity to reflect on their mental states.

The use of drawing tests need not be limited to therapeutic settings. Since it is easy to administrate and can be administered to multiple children at once, the H-T-P test can easily be used in school or other settings where fast assessments of emotional problems and risk factors might be needed. This is maybe where the newly developed H-T-P scoring manual could be most effective, since with no more than a simple training, school counsellors and other childcare workers can obtain basic ideas about a child's relationship difficulties and general well-being. Using drawing assessments in counselling has been

reported to be preferable over self-report scales due to shortcomings related to being applied to children (Xiong & Ye, 2012).

5.3. Limitations And Future Research

The current study has several limitations, largely related to sample characteristics. Participants of this study were 85 children. This is a small number to test the validity of a scale (Comrey & Lee, 1992). Small sample size might have increased the probability for error and decreased the power of current findings. More specifically, although several variables such as gender and IQ were normally distributed, a small sample size resulted in limited variance and abnormally distributed data points in many H-T-P and MST categories.

Most importantly, participants were not normally distributed in terms of attachment security and attachment prototypes. It was seen that a large portion of the participants were insecure and avoidant. This distribution does not reflect population characteristics since it is assumed that the general population is largely securely attached (Shmueli-Goetz et al., 2008). As a consequence, the results might be biased towards drawing characteristics related to avoidant attachment. Drawing characteristics related to other attachment styles were probably underrepresented, thereby making avoidant attachment indicators more visible and statistically significant in analysis. Moreover, males and females were also not equally presented in each attachment prototype group. Children with avoidant and disorganized attachment consisted mostly of males. There were significant differences between the H-T-P scores of males and females, which might be partly affected by this imbalance.

Another underrepresented group in the current study was children between the ages of 10-12. Although this study controlled for age-based differences, a small amount of data was collected from children in this age range, compared to other age groups. As previously mentioned, children start to make more realistic and detailed drawings as they age (Yavuzer, 2016). Since detail level was a significant variable in this study, more

children in the older group could help to assess differences based on detail levels more reliably. In conclusion, future studies are encouraged to provide further evidence for the validity and reliability of the H-T-P scoring manual using a larger, more normally distributed and more representative sample, especially in terms of attachment styles and age. Future studies can also examine the H-T-P drawings of other age groups, such as adolescents or preschool children. Although drawing abilities change with age, it is estimated that children as young as 4 years old tend to make emotionally meaningful drawings (Akkapulu, 2010).

Participants of this study could be considered a mixed sample in terms of psychopathology. Although most of the children applied for psychological assessment in Bilgi University's Psychological Counselling Center, half of them showed subclinical symptom levels. The current study used symptom levels only as a control variable. Drawing differences between clinical and subclinical samples were not compared. This being said, drawing tests were previously found to reveal different results when applied to inpatient versus outpatient samples (Rosen et al., 2023). Hence, in order to further support the validity and utility of the H-T-P test, it is suggested that further research should focus on the test's ability to discriminate between clinical and subclinical samples of children (Sayıl, 2004). It would also be a valuable addition to the field if future studies compared children's H-T-P drawings before and after psychotherapy in order to see if and how outcomes of therapy are reflected in H-T-P drawings. Although this topic was previously studied with other drawing assessments, it has not been studied using the H-T-P test (*for an example, see* Hamama & Ronen, 2008).

This study was a preliminary attempt to combine fundamental drawing elements in H-T-P drawings and provide a manual that enables fast and detailed scoring. This is also the first ever validation attempt regarding H-T-P drawings and attachment & mentalization. The use of a novel scoring manual to measure previously unexplored topics in relation to H-T-P might have constituted another significant limitation. It would also be preferable to use a previously validated scoring system and see if it would also reveal valid results regarding attachment and mentalization. However, since existing research about the H-T-P was scarce and concentrated mostly on adults, sexually-related concepts or kinetic

H-T-P drawings, the researcher felt the need to develop this scoring manual. This scoring manual is open to many improvements and further research to explore its utility with other psychological concepts, such as depression or anxiety. Furthermore, this scoring manual disregarded children's answers for the post-drawing interrogation questions. It has been emphasized multiple times that children's own perspectives and narratives about drawings are crucial for understanding them fully (Buck, 1948; Buck & Hammer, 1969). Future studies could integrate verbal descriptions of drawings into the scoring of the H-T-P test.

Lastly, this study controlled for age, gender intelligence and symptom levels which can be considered a strength. However, there might be other confounding variables which could be controlled in future studies. One such variable might be drawing ability/previous drawing experience, which was found to affect performance in drawing tests in some studies (*see* Motta et al., 1993).

CONCLUSION

Children “use drawings as their own language” (Hamama & Ronen, 2008, p. 93). Those working with children in various settings are encouraged join them by learning this language. In the current study, children’s house, tree and person drawings were explored. Attachment patterns and mentalization capacity were hypothesized to be reflected in these drawings which were basic symbols of mental representations about self and the environment. In order to facilitate the interpretation of these drawings, a quantitative scoring manual was developed. While the predictive power of attachment security and mental state talk over the total number of negative drawing indicators in these drawings was found to be non-significant, significant associations were found with overall detail and drawing size. It was found that more insecurely attached children made more incomplete and simple drawings, while children with higher mental state talk included more individuating details in their drawings. In opposite, children with lower mental state talk made more unusually small drawings. There were also different drawing trends seen in the drawings of children with different attachment styles, which largely supported previous findings with family drawings. In summary, although it should be noted that these results were obtained from a limited sample, the findings are new and meaningful additions to the H-T-P and mentalizing literautre.

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APPENDICES

Appendix A. Ethics Board Approval Form

Ethics Board Approval is available in the printed version of this dissertation.

Appendix B. H-T-P Post Drawing Interrogation Questions (in Turkish)

Araçlar: En az 5 tane beyaz A4 kağıt, 2 adet kurşun kalem (1 tanesi yedek)

1) **"Bana bir ev çiz."**

Çocuk evi çizdikten sonra aşağıdaki sorular sorulur:

1. Bu kimin evi?
2. Bu evde kimler yaşıyor?
3. Sen olsan bu evde yaşar mıydın? (*Evet derse,* "Hangi odasında kalmak isterdin?)
4. Bu ev sana ne düşündürüyor?
5. Bu evin en iyi/kötü kısmı/odası hangisi?
6. Bu evin en çok ihtiyaç duyduğu şey nedir?
7. Bu ev nerede?
8. Bu evin etrafında başka evler var mı yoksa tek başına mı duruyor?
9. Bu resimde ne oluyor?

2) *(Sorular bittikten sonra)* **"Bana bir ağaç çiz."**

Çocuk ağacı çizdikten sonra aşağıdaki sorular sorulur:

1. Bu nasıl bir ağaç? Ne tür bir ağaç?
2. Resimde hangi mevsimdeyiz ve hava nasıl?
3. Bu ağaç kaç yaşında sence?
4. Peki, bu ağaç sağlıklı mı (yaşıyor mu ölmüş mü)?
5. Bu ağaca zarar veren birisi olmuş mu?
6. Bu ağaç nerede?
7. Bu ağacı sevdin mi?
8. Bu ağacın en iyi/kötü kısmı hangisi?
9. Yaz geldiğinde çiçek açacak mı?
10. İleride bu ağaca ne olacak?
11. Bu resimde ne oluyor?

3) *(Sorular bittikten sonra)* **"Bana bir insan çiz; ama çöp adam olmasın, bütün vücudu olsun."**

Çocuk insanı çizdikten sonra aşağıdaki sorular sorulur:

1. Bu çocuk kaç yaşında?
2. Resimde ne yapıyor?
3. Kimlerle birlikte yaşıyor?
4. Okula gidiyor mu?
5. Arkadaşları var mı?
6. Büyünce ne olmak istiyor?
7. Bu çocuğun yapmaktan hoşlandığı 3 şey nedir?
8. Bu çocuğu mutlu eden 3 şey nedir?
9. Bu çocuğu mutsuz eden 3 şey nedir?
10. Bu çocuğu kızdıran 3 şey nedir?
11. Bu çocuğu korkutan 3 şey nedir?
12. Bu çocuğun kendinde en sevdiği özellik ne?
13. Bu çocuğun kendinde en sevmediği özellik ne?
14. Bir peri gelse ve kendisinden 3 dilek dilemesini istese, neler dilerdi?

4) *(Sorular bittikten sonra)* **"Şimdi de bir …** *(çocuğun çizdiği insanın karşıt cinsiyeti)* **resmini çiz."**

İnsan resminde sorulan soruların aynısı bu resim için de sorulur.

Appendıx C. H-T-P Item Descriptions

Categories	Items	Description
line quality	1. interrupted lines	Anxiously drawn, short lines on top of each other
	2. chaotic lines	Meaningless, curved lines
	3. light lines	Lines drawn with light pressure
	4. heavy lines	Lines drawn with heavy pressure
	5. shading	Entire figures or parts (e.g., eyes, hands, roof…) shaded, i.e., filled in.
Size	6. small figure	Figure size unusually small, covers a very small portion of the paper
	7. large figure	Figure size unusually large, covers a big portion of the paper
location	8. drawn off-center	Figures drawn near the edges of paper (right/88indows top/bottom)
distortions	9. poor proportions	Proportions of the house, tree and 88indows88re not realistic. E.g., roof-to-building ratio, crown-to-trunk ratio, unusual relative sizes of body parts…
	10. disconnected parts	Parts of the figures are not connected to each other.
Bizarre items	11. bizarre items	House: violent themes, damaged, collapsed house, sharp fences around the house, sharp ice hanging down the roof…
		Tree: violent themes, damaged, dying, fallen tree, sharp branches
		Person: violent themes, figures not resembling a person (robot, animal…), sex not identified, hollow eyes (with no eyeballs), exposed genitals
overall detail	12. simplified figure	Even if there are no significant omissions, figure is drawn bluntly, without any realistic details, just as general shapes.
	13. detailed figure	Details added outside the figure (e.g., objects in the hand of person, animals or humans next to the tree, cars, a garden or a pool next to the house, more than one house/tree/person…) or inside the figure (detailed bricks of the roof, curtains on the window, detailed texture drawing, eyelashes, detailed clothing, hair accessories, teeth, three-dimensional house…)
	14. significant omissions	Absence of one or more of: the main building, the roof, 88indows or doors in the house; the trunk or the crown in the tree; the head, arms, legs, hands, feet, eyes, the mouth and the neck in the person.
	1p. One dimentional body parts (person)	A score of 2 is given if the whole person is one-dimensional. A score of 1 is given if one or more parts of the person is one-dimensional (e.g., the legs or the arms)
negative facial expressions	*2p. Anger*	multiple emotions can be present together
	3p. Fear	
	4p. Disgust	

	5p. Sadness	
Detailed omissions – house	door	scored 0 if the item is not present, 1 if the item is present
	windows	
	roof	
	chimney	
Detailed omissions – tree	trunk	
	canopy	
	branches	
	leaves	
	fruits	
	ground line	
	root	
Detailed omissions – person	head	
	hair	
	eyes	
	ears	
	nose	
	mouth	
	hands	
	feet	
	arms	
	legs	
	neck	

Appendıx D. Partial Correlations Between H-T-P And MST (C1-C5)

H-T-P Categories		Temotion	Tcognition	*Tperception*	Tphysiological	Taction
TOTAL Line Quality	Pearson Correlation	-0,20	-0,16	-0,07	-0,06	-0,05
	Sig. (2-tailed)	0,10	0,20	0,57	0,64	0,66
Light Lines Total	Spearman Correlation	-0,23	-0,21	-0,05	-0,19	-0,04
	Sig. (2-tailed)	0,06	0,09	0,69	0,13	0,76
Heavy Lines Total	Pearson Correlation	-0,05	0,07	0,10	0,14	-0,05
	Sig. (2-tailed)	0,71	0,58	0,41	0,27	0,69
Intr.+Chao +Shade	Pearson Correlation	-0,14	-0,16	-0,14	-0,07	-0,03
	Sig. (2-tailed)	0,27	0,20	0,27	0,55	0,84
TOTAL Size	Pearson Correlation	-0,04	0,14	0,22	0,14	-0,21
	Sig. (2-tailed)	0,73	0,25	0,07	0,26	0,09
Small figure total	Pearson Correlation	0,01	0,27	0,09	0,15	0,18
	Sig. (2-tailed)	0,92	**0,03***	0,45	0,23	0,16
Large figure total	Pearson Correlation	-0,05	-0,20	-0,17	-0,07	-0,36
	Sig. (2-tailed)	0,71	0,10	0,17	0,59	**0,003****
TOTAL Detail	Pearson Correlation	0,03	0,25	0,06	-0,07	0,10
	Sig. (2-tailed)	0,81	**0,04***	0,62	0,59	0,40
Simplified + Stick +	Pearson	-0,02	0,26	0,14	0,10	0,05

Omission total	Correlation					
	Sig. (2-tailed)	0,85	**0,03***	0,27	0,44	0,67
Detailed figure total	Pearson Correlation	0,06	-0,12	-0,13	-0,20	0,03
	Sig. (2-tailed)	0,61	0,34	0,30	0,11	0,81
TOTAL Distortion	Spearman Correlation	0,15	0,03	-0,06	-0,04	-0,22
	Sig. (2-tailed)	0,22	0,81	0,60	0,75	0,07
TOTAL Neg. Exp.	Spearman Correlation	-0,04	-0,05	-0,10	-0,12	-0,16
	Sig. (2-tailed)	0,75	0,70	0,41	0,32	0,20
TOTAL Location	Pearson Correlation	0,06	0,05	0,18	0,23	0,07
	Sig. (2-tailed)	0,61	0,70	0,14	0,06	0,55
TOTAL Bizarre Items	Pearson Correlation	-0,06	0,06	-0,16	-0,02	0,17
	Sig. (2-tailed)	0,62	0,64	0,20	0,85	0,16
TOTAL HOUSE	Spearman Correlation	0,10	-0,04	0,20	0,12	-0,08
	Sig. (2-tailed)	0,42	0,78	0,10	0,35	0,51
TOTAL TREE	Pearson Correlation	0,03	0,07	0,04	0,02	-0,12
	Sig. (2-tailed)	0,82	0,58	0,72	0,88	0,33
TOTAL PERSON	Pearson Correlation	-0,15	0,08	-0,03	0,03	-0,16
	Sig. (2-tailed)	0,22	0,50	0,82	0,84	0,21

Note. * $p < .05$, ** $p < .01$, *** MST categories written in italics are not normally distributed, hence, Spearman Rank Correlations are reported. T: total.

Appendix E. Partial Correlations Between H-T-P And MST (Self, Other, Causal, Unique And C6-C10)

H-T-P Categories		*TSelf (story)***	TOther (story)	TCausal	TUnique	*TSelf*	*TOther*	*TSituational*	*TOpacity*	*Tinapp*
TOTAL Line Quality	Pearson Correlation	-0,06	0,04	0,12	-0,08	0,19	0,02	-0,08	-0,08	0,10
	Sig. (2-tailed)	0,64	0,75	0,34	0,53	0,12	0,87	0,51	0,52	0,43
Light Lines Total	Spearman Correlation	0,02	-0,06	-0,04	0,00	0,09	0,00	0,13	-0,02	0,12
	Sig. (2-tailed)	0,87	0,66	0,73	0,99	0,46	0,97	0,30	0,85	0,33
Heavy Lines Total	Pearson Correlation	-0,11	0,10	0,14	-0,06	0,02	-0,07	-0,16	-0,02	-0,01
	Sig. (2-tailed)	0,36	0,41	0,28	0,62	0,85	0,58	0,21	0,87	0,97
Intr.+Cha o+Shade	Pearson Correlation	-0,02	0,02	0,10	-0,07	0,20	0,07	-0,08	-0,09	0,08
	Sig. (2-tailed)	0,87	0,88	0,42	0,58	0,10	0,58	0,52	0,49	0,53

TOTAL Size	Pearson Correlation	-0,18	0,04	-0,21	-0,04	-0,01	-0,06	0,01	-0,02	-0,22
	Sig. (2-tailed)	0,14	0,75	0,09	0,73	0,93	0,63	0,96	0,88	0,07
Small figure total	Pearson Correlation	-0,28	-0,12	-0,14	-0,11	-0,14	-0,01	0,07	-0,03	-0,09
	Sig. (2-tailed)	**0,02***	0,33	0,26	0,37	0,26	0,96	0,59	0,81	0,46
Large figure total	Pearson Correlation	0,13	0,17	0,00	0,10	0,15	-0,04	-0,07	0,02	-0,06
	Sig. (2-tailed)	0,30	0,17	0,97	0,44	0,22	0,77	0,55	0,87	0,65
TOTAL Detail	Pearson Correlation	0,05	0,10	0,01	0,08	-0,09	-0,24	0,04	-0,15	0,22
	Sig. (2-tailed)	0,70	0,41	0,92	0,51	0,49	0,06	0,72	0,22	0,08
Simplified + Stick + Omission total	Pearson Correlation	-0,19	-0,10	-0,18	-0,14	-0,04	-0,15	-0,02	-0,14	0,15
	Sig. (2-	0,12	0,42	0,15	0,27	0,73	0,23	0,84	0,27	0,22

	tailed)									
Detailed figure total	Pearson Correlation	0,33	0,24	0,26	0,27	-0,02	-0,03	0,08	0,04	0,01
	Sig. (2-tailed)	**0,01****	0,05	**0,03***	**0,03***	0,84	0,82	0,53	0,77	0,96
TOTAL Distortion	Spearman Correlation	0,05	0,13	-0,11	0,10	-0,05	0,05	-0,16	-0,19	-0,07
	Sig. (2-tailed)	0,70	0,28	0,38	0,40	0,67	0,67	0,19	0,13	0,59
TOTAL Neg. Exp.	Spearman Correlation	-0,23	-0,11	-0,20	-0,17	-0,10	-0,13	-0,11	0,03	-0,03
	Sig. (2-tailed)	0,06	0,36	0,10	0,18	0,42	0,31	0,39	0,79	0,80
TOTAL Location	Pearson Correlation	-0,05	0,00	0,03	-0,01	-0,09	0,00	0,11	0,03	-0,01
	Sig. (2-tailed)	0,70	1,00	0,79	0,95	0,48	0,99	0,38	0,81	0,96
TOTAL Bizarre Items	Pearson Correlation	-0,08	0,12	-0,04	0,05	-0,08	0,05	-0,03	-0,02	0,25
	Sig. (2-	0,54	0,34	0,75	0,71	0,51	0,67	0,82	0,86	**0,04***

	tailed)									
TOTAL HOUSE	Spearman Correlation	-0,11	0,08	0,06	-0,07	0,12	0,11	0,05	-0,03	0,02
	Sig. (2-tailed)	0,36	0,54	0,64	0,59	0,32	0,38	0,71	0,84	0,87
TOTAL TREE	Pearson Correlation	0,08	0,21	0,12	0,15	0,09	-0,05	0,01	0,08	0,13
	Sig. (2-tailed)	0,50	0,08	0,34	0,23	0,48	0,67	0,93	0,51	0,31
TOTAL PERSON	Pearson Correlation	-0,20	0,06	-0,18	-0,03	-0,12	-0,16	-0,13	-0,22	0,08
	Sig. (2-tailed)	0,11	0,62	0,15	0,78	0,33	0,20	0,29	0,07	0,52

Note. * $p < .05$, ** $p < .01$, *** MST categories written in italics are not normally distributed, hence, Spearman Rank Correlations are reported. T: total.