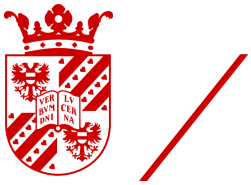

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Assessing Reward Anticipation in (Sub-)Clinical Populations: Available Self-Report Measures – A systematic literature review

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Abstract

Understanding reward anticipation has emerged as a promising avenue for improving psychological interventions in mental health. This systematic literature review investigates the conceptual underpinnings, psychometric properties, and applicability of self-report instruments assessing reward anticipation in (sub-)clinical populations. Following PRISMA guidelines, the database PsycINFO was searched for studies published between 2015 and 2025. Inclusion criteria required studies to use validated self-report measures of reward anticipation and report psychometric properties in (sub-)clinical populations. Eighteen studies were included, and five additional sources were used for instrument background information. Results revealed five categories of instruments: the Snaith-Hamilton Pleasure Scale (SHAPS), Temporal Experience of Pleasure Scale (TEPS), the Chinese Version of the TEPS (CV-TEPS), expectation of future emotional state questions, and ecological momentary assessment/ experience sampling method (EMA/ESM)-based tools. Most instruments assessed anticipatory pleasure; a construct closely linked to reward anticipation. The TEPS demonstrated the strongest psychometric properties for measuring trait anticipatory pleasure, while EMA-based tools captured state anticipation with high ecological validity but limited reported psychometric properties. Despite growing interest, reward anticipation remains inconsistently conceptualised, especially across state versus trait domains. This review highlights the need for further validation and refinement of measurement tools and conceptual clarity in future studies. Accurate operationalization of reward anticipation is essential for developing targeted, effective interventions in clinical practice.

Keywords: reward anticipation, self-report measures, (sub-)clinical population, anticipatory pleasure, literature review

Assessing Reward Anticipation in (Sub-)Clinical Populations: Available Self-Report Measures – A systematic literature review

In recent years, mental health has gained significant attention, and seeking therapy has become increasingly accepted (Russell and Patrick, 2018). Mental health disorders are a global concern. In 2019, an estimated 970 million people globally had a mental disorder and the prevalence of mental disorders is increasing (GBD 2019 Mental Disorders Collaborators, 2022). Despite the availability of numerous treatment options these treatments still leave room for improvement because many people do not fully recover and relapse rates are high (39-72%) (Robberegt et al., 2023; Steinert et al., 2014; WHO, 2022). These limitations highlight the need for new approaches to intervention.

One promising direction for improving current mental health interventions is to examine psychological constructs that have received relatively little attention in existing therapies. One such construct is reward anticipation, which plays a role in mental health, particularly in fostering resilience and regulating affective states, by promoting goal-directed behaviour and counteracting negative mood states (Dresp-Langley, 2023; Grahek et al., 2019; Pizzagalli et al., 2008; Ryan and Skandali, 2016; Sherdell et al., 2012).

Various mental health conditions have been linked to impairments in reward anticipation (Hallford and Sharma, 2019; Wang et al., 2015). In depression the reduced ability to anticipate pleasurable experiences is associated with symptoms such as anhedonia, decreased motivation, diminished goal-directed behaviour, and decreased willingness to exert effort for rewards (Khazanov et al., 2022; Parsons et al., 2025; Pizzagalli et al., 2008; Sherdell et al., 2012; Whitton et al., 2015). Research has also shown that people with schizophrenia exhibit impaired reward anticipation, reflecting a diminished ability to anticipate future pleasurable experiences (Li et al., 2015). In addition, reward anticipation has been linked as a potential early marker of psychopathology as it has been detected in subclinical populations. For example, reduced neural responses during reward association has been associated with

depressive symptoms in adolescents of depressive parents (Olino et al., 2014). These findings underscore the relevance of reward anticipation across both clinical and subclinical populations.

Disruptions in reward processing are not sufficiently targeted by existing interventions for depression, highlighting the need for novel treatment approaches that directly enhance reward anticipation and motivation (Bär et al., 2024; Treadway and Zald, 2011). Although promising, targeted approaches for improving reward anticipation in mental disorders are still in an early stage of development (Hallford and Sharma, 2019). Moreover, reward anticipation itself continues to be an underexplored construct in clinical research (Der-Avakian and Markou, 2012). This thesis aims to start filling the gap and contribute to the growing body of research by systematically reviewing studies of self-report measures assessing reward anticipation in (sub-)clinical populations, aiming to inform the development of more targeted and effective therapeutic interventions that address motivational deficits in mental disorders.

A clear conceptualization of reward anticipation as a psychological construct is essential not only for designing targeted interventions, but also for assessing the effectiveness of these interventions focused on reward anticipation. Reward anticipation refers to the motivational and emotional response when looking to acquire a pleasant event, before it actually occurs (Berridge and Robinson, 2003; Franzen et al., 2019; *NIMH*, z.d.; Renner et al., 2021; Shankman et al., 2013). Reward anticipation is a component of reward processing which is generally conceptualized as consisting of two main components: reward anticipation and reward consumption, as proposed by conceptualizations by Berridge and Robinson (2003) and Renner et al. (2021). The theoretical framework proposed by Berridge and Robinson (2003) systematically distinguishes reward into three psychological components: learning, “liking”/emotion or affect, and “wanting”/ motivation. Learning refers to the formation of associations between cues and outcomes, allowing individuals to predict the occurrence of rewards. “Wanting” refers to the conscious experience of desire, which can be

described as reward anticipation, whereas “liking” denotes the conscious, in-the-moment experience of pleasure or the emotional impact of the reward itself (reward consumption) (Gard et al., 2006). This thesis will focus on the “wanting”, anticipatory component. Reward anticipation is vital in guiding goal-directed behaviour and is therefore critical in developing treatments aimed at enhancing reward-motivated actions (Berridge and Robinson, 2003; Renner et al., 2021). Current research suggests that impairments in reward motivated behaviour are more strongly linked to deficits in reward anticipation than in reward consumption (Hallford and Sharma, 2019; Renner et al., 2021).

Reward anticipation has been measured through a variety of methods, including the most common measure the monetary incentive delay tasks (Balodis and Potenza 2015; Cao et al., 2019). Other methods are behavioural paradigms (e.g., probabilistic reward tasks, Pizzagalli et al., 2008), neuroimaging tasks (Geugies et al., 2022; Der-Avakian and Markou, 2012), and self-report questionnaires (Gard et al., 2006; Snaith et al., 1995). Numerous studies have focused on the neurobiological underpinnings of reward anticipation, such as altered striatal activation during reward cues (Linnet, 2014). But it is equally important to investigate behavioural constructs that reflect reward anticipation, in order to translate the insights into clinical interventions.

There are a few self-report measures that include items related to reward anticipation. For example, the Temporal Experience of Pleasure Scale (TEPS; Gard et al., 2006) and the Snaith-Hamilton Pleasure Scale (SHAPS; Snaith et al., 1995). However, these instruments can vary in how precisely they assess reward anticipation.

Despite the growing interest in reward anticipation, the literature currently lacks a systematic overview of available self-report instruments that measure it and their psychometric properties (e.g., reliability, validity). Such an overview is essential to guide future research and to inform clinical assessment and treatment monitoring practices. An overview of existing self-report measures of a psychological construct is essential because it

facilitates clarity, consistency, and scientific progress. As Westen and Rosenthal (2005) emphasize, our conceptual understanding of psychological constructs is dynamic and evolving; therefore, maintaining a critical perspective on the tools used to assess them is fundamental. In the context of applied research, for instance, the accurate operationalization of constructs such as reward anticipation can directly inform the design and implementation of effective psychological interventions.

The aim of this thesis is to systematically review and evaluate existing self-report instruments that assess reward anticipation in (sub-)clinical populations, evaluate the psychometric quality of these instruments, and consider which self-report measure would be most appropriate to include in future study designs.

Methods

Search Strategy

This review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021). Between May 2025 and June 2025, the electronic database PsycINFO was searched using specific search terms and Boolean operators (e.g., AND; OR) to refine the search strategy. The literature search was conducted using a combination of synonyms related to reward anticipation (e.g., anticipated positive affect), measures (e.g., questionnaire, self-report), and (sub-)clinical populations (e.g., psychopathology), while excluding studies that referenced animal research, prediction error or neuroimaging techniques (e.g., EEG) in the title, abstract, or keywords. There is a lot of literature about reward learning, but to maintain the feasibility of the current review within the scope of this thesis, studies focusing on reward learning (prediction error), as well as animal and neuroimaging studies were excluded, using the Boolean operator NOT. See Appendix A for the search string.

Beyond the studies retrieved from PsycINFO, the author further reviewed reference

lists from relevant articles and the database PsycINFO for background information (mainly on psychometric properties) of the self-report measures.

Inclusion Criteria

Studies were included according to the following inclusion criteria: (1) published international English language articles, (2) reward anticipation was measured with a validated self-report questionnaire or other self-report measure, (3) psychometric properties of the self-report measure were discussed in the article, (4) the study was conducted in a (sub-)clinical population, (5) papers must be published between 2015 and 2025.

An important clarification should be made regarding the inclusion criterion (3). A substantial number of studies utilize ecological momentary assessment/experience sampling methods (EMA/ESM), while not all studies report psychometric properties. Excluding them would risk omitting valuable information and limiting the comprehensiveness of this review. Therefore, these studies were included.

To ensure the review reflects the most recent and methodologically relevant findings, the publication date filter in PsycINFO was adjusted to include only studies published between 2015 and 2025. This ten-year window captures the recent developments in the conceptualization and measurement of reward anticipation. Limiting the time frame also reduces the inclusion of outdated methodologies, ensuring that the reviewed literature aligns with contemporary theoretical frameworks and clinical relevance. Moreover, this approach enhances the feasibility of the review by narrowing the scope while maintaining a robust and representative sample of recent studies.

Exclusion Criteria

Studies were excluded, if they were: (1) literature reviews and dissertations, (2) neurobiological studies focusing on the brain areas, which are involved in the process of reward anticipation.

Data Extraction

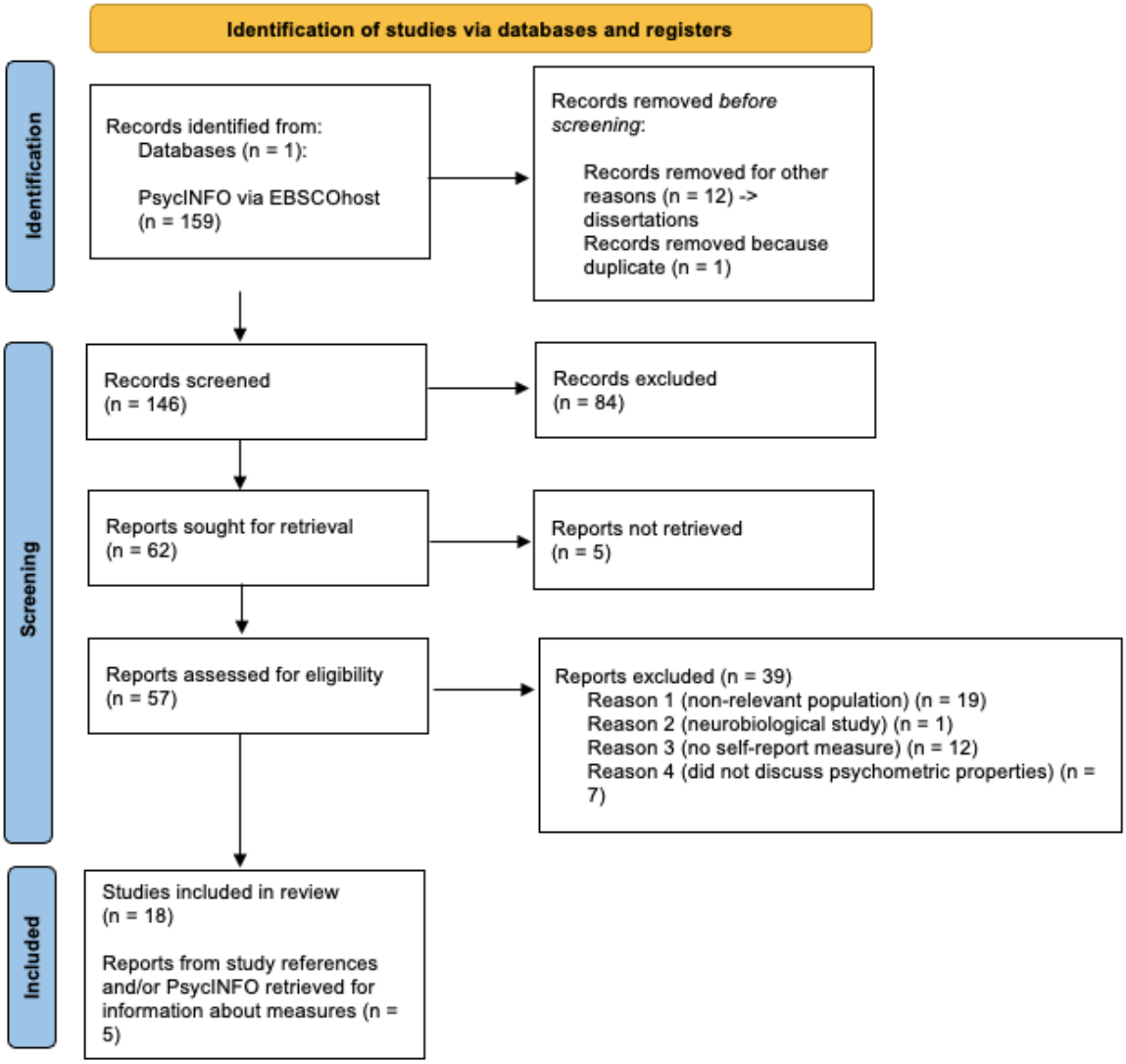
Found studies and measurement tools were categorized according to characteristics, such as the construct the instrument is measuring and example questions. Further characteristics included the recall period (for EMA/ESM studies), number of items and sub-scales, response options and reported psychometric properties, such as reliability and validity. Details regarding the population and the language of measure assessment were also recorded. When reviewing the literature, it was ensured that all studies employed a (sub-)clinical population.

Results

A flow diagram illustrating the search process is presented in Figure 1. After removing one duplicate and 12 dissertations, 146 articles were screened by title and abstract. After excluding 84 records based on not meeting inclusion criteria or meeting exclusion criteria, 57 full-text articles were assessed for eligibility. Thirty-nine reports were again excluded because of various reasons (reason 1: non-relevant population (n = 19); reason 2: neurobiological study (n = 1); reason 3: no self-report measure (n = 12); reason 4: did not discuss psychometric properties (n = 7)). Ultimately, 18 studies met the inclusion criteria and were included in the review. Aside from the reviewed studies, five studies were included for background information (mainly psychometric properties) of the self-report scales.

Figure 1.

The PRISMA flow diagram.



Note. This figure shows the flow diagram of the study selection process.

Study Characteristics

Of the 18 studies included, eight were published between 2015 and 2019, and ten between 2020 and 2025. Four studies conducted assessments in Chinese, three in German, and the majority (n = 11) in English. Two studies investigated subclinical populations, while the remaining 16 focused on clinical populations, such as participants diagnosed with schizophrenia spectrum disorder or major depressive disorder. See Appendix B for a table listing all reviewed studies including the self-report measures used, languages, and (sub-)clinical populations, excluding the five studies that were retrieved for additional psychometric information.

Measured Constructs

This section will focus on the constructs assessed with self-report measures. Importantly, none of the examined studies explicitly conceptualized their assessments under the construct of reward anticipation. In the following, the constructs will be defined that were measured and are related to reward anticipation.

A total of 15 studies employed the construct anticipatory pleasure. Anticipatory pleasure is a multifaceted construct involving both the cognitive prediction of future pleasure and the immediate emotional response evoked by imagining a rewarding event (Gard et al., 2007; Rosebrock et al., 2021). Anticipatory pleasure refers to the ability to derive enjoyment from anticipating or looking forward to future positive experiences. It involves the motivational and affective processes engaged when imagining or expecting rewarding outcomes. It differs from consummatory pleasure, which is the hedonic response during the actual experience of a rewarding event.

It is also important to consider the distinction between trait and state aspects of the construct, as this division applies to reward anticipation as well. Trait anticipatory pleasure refers to a stable, personality-linked disposition that governs how consistently individuals experience pleasure in anticipation of positive outcomes over time (Gard et al., 2006). This enduring characteristic reflects a general tendency to feel excitement or motivation toward future goals, regardless of situational fluctuations.

State anticipatory pleasure denotes the transient emotional experience tied to the anticipation of a specific, context-bound rewarding event. It varies with internal states like mood and external stimuli such as time of the day or situational cues (Li, Zhang, Huany, et al., 2019). As such, state anticipatory pleasure is typically measured using EMA (Shiffman and Hufford, 2008). Importantly, Gard et al. (2006) and subsequent work by Hallford, Sharma, and Austin (2020) found that only trait deficits, not state fluctuations, consistently predict anhedonic symptoms in depression and schizophrenia.

The remaining 3 studies of the 18 reviewed employed two different constructs related to reward anticipation. Of these two different constructs, one is affective forecasting, which refers to the process by which individuals predict their future emotional states in response to potential events (Gilbert and Wilson, 2007; Thompson et al., 2017). It involves anticipating the intensity, duration, and type of emotional reactions people will experience. Positive affective forecasting therefore highlights the anticipation of positive emotional states.

The other construct, mood expectation, refers to how individuals predict their future emotional states, often with a bias that reflects their mental health (Zetsche et al., 2019). The study by Zetsche et al. (2019) found that people with depression tend to expect more sadness and less happiness than they actually experience. These negatively biased forecasts could intensify depressive symptoms and hinder effective emotion regulation.

Self-Report Measures of Reward Anticipation

This thesis aimed to identify reliable measures for assessing reward anticipation. The present section focuses on five distinct self-report measures of reward anticipation, each identified through this literature review. Each measure is analysed in terms of the measured construct, examples, and psychometric properties. Out of the 18 studies, three studies employed the SHAPS (Snaith et al., 1995), seven employed the TEPS (Gard et al., 2006), four implemented the Chinese Version of the TEPS (CV-TEPS; Chan et al., 2012), another three studies made use of questions assessing the expectation of future emotional states, and six utilized specific items in EMA/ESM protocols. Table 1, 2, and 3 present the different measures used across studies. The five studies used to assess the psychometric properties and other characteristics of the SHAPS, TEPS, and CV-TEPS are the three original validation studies by Snaith et al. (1995), Gard et al. (2006), and Chan et al. (2012), respectively, as well as Franken et al. (2007) for the SHAPS and Fang et al. (2021) for the CV-TEPS.

Table 1

Self-Report Scales: Overview of Constructs and Psychometric Properties

Instrument	Construct	Examples	Items (and sub-scales)	Response Options	Internal consistency (Cronbach's alpha)	Test-retest reliability	Convergent Validity	Discriminant Validity
SHAPS The Snaith-Hamilton Pleasure Scale (Snaith et al., 1995)	Anticipatory pleasure	"I would enjoy being with family or close friends" "I would enjoy my favourite television or radio programme" "I would enjoy a cup of tea or coffee or my favourite drink"	14 items	4-point scale ranging from: 1 (*definitely agree*) to 4 (*strongly disagree*)	.81 - .82 (retrieved from Li, Zhang, Huany, et al., 2019; Pillny et al., 2024; Webb et al., 2024)	r = .70 (p < .001) (retrieved from Franken et al., 2007)	Significantly correlated with Becks Depression Inventory (BDI; Beck et al., 1961) (r = .64, p <.001) (retrieved from Franken et al., 2007)	Significant between-groups effect $F(2,87)$ = 9.0, p <.001 (depressive, psychotic and substance abuse patients, control group) Bonferroni-corrected post hoc tests showed that depressive, psychotic, and substance abuse patients had significantly higher SHAPS scores than controls (all p < .001). (retrieved from Franken et al.,

								2007)
TEPS The Temporal Experience of Pleasure Scale (Gard et al., 2006)	Anticipatory pleasure	„I look forward to a lot of things in my life“ „When ordering something of the menu, I imagine how good it will taste“	18 items (2 subscales, 10 items anticipatory pleasure (TEPS-ANT) and 8 items consummatory pleasure)	6-point scale ranging from: 1 (*very false for me*) to 6 (*very true for me*)	Total scale: .71 - .87 TEPS-ANT: .74 - .80 (retrieved from Da Silva et al., 2017; Dolan et al., 2022; Dolan et al., 2023; Hallford, Barry, et al., 2020; Hallford, Sharma, and Austin, 2020; Horne and Quigley, 2024; Rosebrock et al., 2021)	Total scale: r = .81 (p <.001) TEPS-ANT: r = .80 (p < . 001) (retrieved form Gard et al., 2006)	TEPS-ANT was significantly negatively correlated with the Physical Anhedonia Scale (PAS; Chapman et al., 1976) (*r* = -.41, *p* <.05) (retrieved from Gard et al., 2006)	Negative Affect (of the Positive Affect Negative Affect Schedule; PANAS;) (r = .10, p <.05) and Social Desirability (of the Marlowe–Crowne Social Desirability Scale (MC; Ballard, 1992) (r = -.03, p <.05) (retrieved from Gard et al., 2006)
CV-TEPS The Chinese version of the TEPS (Chan et al., 2012)	Anticipatory pleasure	“On the way to my first date with my beloved, I can hardly wait to see him/her.” (Added item, Anticipatory pleasure scale)	20 items (modified with two new items)	6-point scale ranging from: 1 (*very false for me*) to 6 (*very true for me*)	Total scale: .76 - 0.84 TEPS-ANT: .53 - .71 (retrieved from Li et al., 2015; Li, Zhang, Huany, et al., 2019; Li, Zhang, Fan et al., 2019; Wang et al., 2015) Composite reliability values of *r* = .71 for both factors (with and without motivation	r = .61 - .79 (retrieved from Li et al., 2015; Li, Zhang, Huany, et al., 2019; Li, Zhang, Fan et al., 2019; Wang et		Heterotrait-monotrait ratio of correlations (HTMT) value of *r* = .70 (below the accepted threshold of .85) (retrieved from Fang et al., 2021)

			driving) (above threshold of .60) (retrieved from Fang et al., 2021)		al., 2015)	

Table 2

Expectation of Future Emotional States questions: Overview of Constructs and Psychometric Properties

Study	Construct	Examples	Items (and sub-scales)	Response Options	Internal consistency (Cronbach's alpha)	Discriminant Validity
Zetsche et al. (2019)	Mood expectation	Participants where asked how much they expected to feel CHEERFUL/ CAREFREE on average during the following four days.	2 happy items (from PANAS, extended version (PANAS-X; Grühn et al., 2010))	5-point scale ranging from: 1 (*not at all*) to 5 (*very much*)	.77	
Mathersul and Ruscio (2020)	Affective forecast	"In general, how HAPPY/ DETERMINED/ PROUD do you expect to feel this week?"	3 positive items (retrieved from the Basic Positive and Negative Emotion Scales of the PANAS-X (Watson and Clark 1999))	5-point scale ranging from: 0 (*not all*) to 4 (*very much*)	.76 – .79	Negative Affect (NA) and Positive Affect (PA) shared negative, moderate to large correlations for forecasts (r = −.57)

Thompson et al. (2017)	Forecasted affect	"Please rate the extent to which you predict you will feel amused, fun-loving, or silly TOMORROW/ OVER THE NEXT WEEK" (Tomorrow indicating short-term fame; over the next week indicating long-term frame)	9 x 2 (9 items for PA; short- and long-term) (items retrieved from the Modified Differential Emotion Scale (mDES; Cohn et al. 2009)	5-point scale ranging from: 1 (*not at all*) to 5 (*extremely*)	Short-term PA: .91 Long-term PA: .89

Table 3

Specific Measures based on Ecological Momentary Assessment/ Experience Sampling Method (EMA/ESM): Overview of Constructs and Psychometric Properties

Study	Construct	Recall Period	Examples	Items (and sub-scales)	Response Options	Internal consistency (Cronbach's alpha)
Pillny et al. (2020)	Anticipatory pleasure	ESM protocol six times a day (between 10 am and 10 pm) for six consecutive days	Looking ahead to the next two hours, how much pleasure will you experience from (1)…spending time with relatives, friends or acquaintances (2)…doing hobbies or recreational activities (3)…doing self-care activities such as showering, changing	3 items for 3 topics: (1) Social (2) Recreational (3) Self-care	Scale from 0 to 100%: 0 (*not at all*) to 100 (*extremely strong*)	Between-subject reliability = .79 – .90 Within-subject reliability = .63

			clothes, toothbrushing etc. (taken of the Motivation and Pleasure Self-Report scale (MAP-SR; Llerena et al., 2013) German version (Engel and Lincoln, 2016))			
Edwards et al. (2018)	Anticipatory pleasure	7 questionnaires per day at pseudo-random times (at least 45 min apart) between 8.30 am and 10 pm in accordance with standard ESM protocols (over 1 week)	"How much do you think you will enjoy this activity?" The expectation component of anticipatory pleasure was assessed using the item "What do you think are the chances this activity will occur?"	2 items	7-point Likert scale Ranging from 1 (*not at all*) to 7 (*very much so*) rated from 0 to 100%	
Webb et al. (2024)	Anticipatory pleasure	EMA surveys were triggered every other week for five days (2–3 surveys per day) over 12 weeks.	Participants described any anticipated events for later that day. "How excited do you feel about it?"	1 item	Free response	Split-half reliability for anticipatory pleasure: r = .93
Pillny et al. (2024)	Anticipatory pleasure	For a consecutive week after baseline assessment, EMA survey on anticipatory pleasure six times a day, between 10 a.m. and 10 p.m.	"When you think about the next two hours, how much pleasure do you experience at the thought of doing any of the following activities?" "… visiting friends or relatives" "… talking about personal things" "… going for a walk alone"	16 items	A visual analogue scale from 0% to 100%	
Li, Zhang, Huany, et al. (2019)	Anticipatory pleasure	ESM assessments were sent to each participant's smartphone 3 - 4 times	Participants were asked to indicate what kind of activity they would be involved in next.	2 items	Scale from 1 (*none*) to 10 (*an*	

		each day between 8:00 a.m. to 10:00 p.m., for 14 consecutive days.	Participants were asked to forecast the amount of enjoyment they would derive from that activity they would be involved in next.		*extremely large amount*)
Hallford, Sharma, and Austin, 2020	Anticipatory pleasure	Measures were taken five times per day (8:30am-7pm) over the course of 14 days.	"How pleasant/enjoyable do you think it will be to do this activity?" "How pleasurable/enjoyable is it to just think about doing this activity?"	2 items	Scale from 0 (*not at all*) to 100 (*very much so*)

Snaith-Hamilton Pleasure Scale (SHAPS). In this literature review three studies employed the SHAPS. The SHAPS, established by Snaith et al. (1995), is a self-report questionnaire with 14 items. The construct to be measured is called “hedonic tone” by Snaith et al. (1995). This refers to the estimation of the degree to which a person is able to experience pleasure or the anticipation of a pleasurable experience. The studies employing the SHAPS in this literature review called the construct “anticipatory pleasure” (Li, Zhang, Huany, et al., 2019; Pillny et al., 2024; Webb et al., 2024).

Sample items include statements like: “I would enjoy being with family or close friends”. Responses are given on a 4-point Likert scale ranging from 1 (*definitely agree*) to 4 (*strongly disagree*). The temporal focus in the SHAPS is “in the last few days”, making the self-report measure state-related. The items relate to experiences likely to be encountered by most people. It is thought that translation into other languages for use in different cultural settings will not affect the validity of the SHAPS (Snaith et al., 1995). The scale has been translated into multiple languages including German, Dutch, and Chinese, and has been applied across (sub-)clinical populations such as individuals with schizophrenia spectrum disorders, depression, and adolescents with anhedonia. The SHAPS distinguishes between four different domains: interest/pastimes, social interaction, sensory experience, and food/drink.

Cronbach’s alpha for internal consistency, are ranging from .81 - .82 across the three different studies. The study by Snaith et al. (1995) reports that the SHAPS has good face validity, because the wording of its questions clearly relates to situations that most people find pleasurable (e.g., enjoying food, company, hobbies, or nature). Snaith et al. (1995) also ensured that the scale includes items that span multiple areas of pleasurable experience. Test-retest reliability for the SHAPS was reported by Franken et al. (2007) as $r = .70$, $p < .001$, indicating adequate reliability over time. In Franken et al. (2007), the SHAPS was

significantly correlated with Beck's Depression Inventory (BDI; Beck et al., 1961) (r = .70, p <.001), indicating good convergent validity. To evaluate the discriminant validity of the Snaith-Hamilton Pleasure Scale (SHAPS), Franken et al. (2007) conducted a one-way ANOVA comparing SHAPS scores across four groups: individuals with depression, psychotic disorders, substance use disorders, and a non-clinical control group. The analysis revealed a significant between-groups effect, $F(2, 87) = 9.0$, $p < .001$, indicating that SHAPS scores significantly differed across diagnostic categories. Bonferroni-corrected post hoc comparisons indicated that all three clinical groups depressive (p <.001), psychotic (p <.001), and substance use patients (p <.001) had significantly higher SHAPS scores than the non-clinical control group. Furthermore, after applying Bonferroni correction, depressive patients also showed significantly higher SHAPS scores compared to both psychotic patients (p <.05) and substance abuse patients (p <.001) (Franken et al., 2007). No significant difference was found between psychotic and substance abuse patients following Bonferroni adjustment. This provides strong support for the discriminant validity of the SHAPS, as the scale effectively distinguished between non-clinical individuals and clinical populations, as well as among clinical subgroups with varying levels of anhedonia.

The Temporal Experience of Pleasure Scale (TEPS). The second instrument, developed by Gard et al. (2006), that was employed in seven studies, is the TEPS.
The TEPS is designed to assess both anticipatory and consummatory pleasure as trait-level dispositions. There is even a model composed of the TEPS, proposing two distinct pleasure domains: anticipatory and consummatory pleasure (Rosebrock et al., 2021). The TEPS is a self-report questionnaire developed to measure how people experience pleasure in two different ways: anticipatory pleasure (TEPS-ANT) *and* consummatory pleasure (TEPS-CON), structuring the scale into two subscales and one total scale (TEPS-Total). Only the anticipatory subscale is relevant for this review. The TEPS includes 10 items for anticipatory

pleasure and 8 items for consummatory pleasure scale. Responses are rated on a 6-point Likert scale (1 = *very false for me* to 6 = *very true for me*). Items such as "When something exciting is coming up in my life, I really look forward to it" are indicative of anticipatory pleasure. People who score high on the anticipatory pleasure scale tend to be more responsive to rewards and good at imagining future events.

TEPS-ANT and the TEPS-Total have good internal consistency, with Cronbach's alpha ranging between .71 and .87 on the total scale and .74 - .80 on the TEPS-ANT subscale, according to the seven studies of this review. According to Gard et al. (2006) the TEPS shows high test-retest reliability $r = .81$ ($p < .001$) (for TEPS-Total) and $r = .80$ ($p < .001$) (for TEPS-ANT). Gard et al. (2006), demonstrated good convergent validity for the TEPS, as the TEPS-ANT was negatively correlated with the Physical Anhedonia Scale (PAS; Chapman et al., 1976) ($r = -.41$, $p < .05$). Discriminant validity was supported by weak or non-significant correlations of the TEPS-ANT with unrelated constructs such as negative affect (of the Positive Affect Negative Affect Schedule (PANAS; Watson et al., 1988)) ($r = .10$, $p < .05$) and social desirability (of the Marlowe-Crowne Social Desirability scale (MC; Ballard, 1992)) ($r = -.03$, $p < .05$).

The Chinese Version of the Temporal Experience of Pleasure Scale (CV-TEPS). The CV-TEPS, developed by Chan et al. (2012), is a culturally adapted version of the TEPS (Gard et al., 2006) used predominantly in studies conducted within Chinese populations. The CV-TEPS also measures trait anticipatory and consummatory pleasure. This literature review found four studies employing the CV-TEPS (Li et al., 2015; Li, Zhang, Huany, et al., 2019; Li, Zhang, Fan et al., 2019; Wang et al., 2015). The scale retains the two dimensions of anticipatory and consummatory pleasure, but has also been expanded in some studies to distinguish between abstract and contextual forms of each pleasure type, resulting in a four-factor structure (e.g., abstract anticipatory, contextual anticipatory, abstract consummatory,

contextual consummatory) (Chan et al., 2012; Fang et al., 2021). For instance, abstract anticipatory pleasure involves imagining general future rewards, while concrete anticipatory pleasure relates to specific scenarios like anticipating the taste of a meal.

Two items were added, after two original items did not fit well culturally (Chan et al., 2012). Item 5 ("I love it when people play with my hair") posed a problem because, in Chinese culture, the head is viewed as a highly respected and personal part of the body, often associated with dignity (Chan et al., 2012). Touching someone's head can be seen as intrusive or even disrespectful, making this item potentially offensive. Item 11 ("When I'm on my way to an amusement park, I can hardly wait to ride the roller coasters") also did not resonate well across all age groups. While roller coasters may appeal to younger individuals, they are far less relatable or appealing to many older adults in China. To address these cultural mismatches and preserve the integrity of the scale, Chan et al. (2012) decided to add two new culturally appropriate items: one measuring anticipatory pleasure and the other measuring consummatory pleasure.

The CV-TEPS is therefore composed of 20 items rated on a 6-point Likert scale and has shown good internal consistency, with Cronbach's alpha values ranging from .76 - .84 on the total scale. Internal consistency for the anticipatory subscale was acceptable with $\alpha = .53 - .71$. The test-retest reliability was reported in all 4 studies; $r = .61 - .79$. In the study by Fang et al. (2021) internal consistency and discriminant validity were assessed by using an 18 item CV-TEPS version, focusing on the four-factor structure mentioned above. Internal consistency of the anticipatory pleasure subscale of the CV-TEPS was supported by composite reliability values of $r = .71$ for both factors (with and without motivation driving), indicating that items within each subscale adequately represent their respective latent constructs. Discriminant validity was demonstrated by a heterotrait-monotrait ratio of correlations (HTMT) value of $r = .70$ between the two subscales, below the accepted

threshold of .85, confirming that motivationally-driven and non-motivational anticipatory pleasure are empirically distinct components.

Expectation of Future Emotional States questions. Similar to the EMA studies, three studies in this systematic literature review assessed expectation of future emotional states (affective forecasting) using non-standardized or study-specific questions. These studies employed affective forecasting or mood expectation as the construct of interest.

Zetsche et al. (2019) asked participants before the ambulatory assessment (EMA) to indicate, on a 5-point scale, how much they expected to feel a certain kind of way on average during the following four days, using six emotion adjectives, two happy (cheerful and carefree), two sad (sad and downhearted) and two fearful (nervous and insecure) emotion adjectives. These adjectives were retrieved from the PANAS, extended version (PANAS-X; Grühn et al., 2010). Two items were used to assess happy mood expectations. Mood forecasting scores and Cronbach's alpha were computed for each mood separately (happy, sad and fearful). Zetsche et al. (2019) reported a Cronbach's alpha of .77 for the internal consistency of the happy mood scale.

Mathersul and Ruscio (2020) asked participants to forecast the intensity of the negative (NA) and positive affect (PA) they would feel during the coming week (e.g., "In general, how HAPPY do you expect to feel this week?"). Three positive (happy, determined, proud) and three negative emotions (anxious, sad, dissatisfied with myself) were assessed for affective forecast and retrieved from the Basic Positive and Negative Emotion Scales of the PANAS-X (Watson and Clark 1999). Mathersul and Ruscio (2020) averaged ratings across three positive emotion items separately for forecasts and memories to create composite variables for PA (Cronbach's $\alpha = .76 – .79$). NA and PA showed moderate to large negative correlations for forecasts ($r = -.57$). These negative correlations show that the measures were able to tell apart opposite emotional states, which supports their discriminant validity.

Thompson et al. (2017) employed the Modified Differential Emotion Scale (mDES; Cohn et al. 2009) to assess positive and negative affective forecasting with nine individual positive emotion triplets for the positive affect (amusement, awe, compassion; contentment, gratitude, hope; joy, love, pride) and of eight individual negative emotion triplets for the negative affect mDES subscale (anger, contempt, disgust, embarrassment, fear, guilt, sadness, shame). A sample item includes: "Please rate the extent to which you predict you will feel amused, fun-loving, or silly tomorrow/ over the next week." Thompson et al. (2017) made a distinction between short-term and long-term with the use of a time frame in the questions using "tomorrow" (short-term) and "over the next week" (long-term). As a result, the positive affective forecasting subscale included nine triplets with two different time frames. Thompson et al. (2017) created composite scores for positive affect (PA) by averaging the positive emotion item ratings within each time frame. Internal consistency, measured via Cronbach's alpha, was high for both short-term ($\alpha = .91$) and long-term ($\alpha = .89$) forecasts.

Specific Measures based on Ecological Momentary Assessment/ Experience Sampling Method (EMA/ESM). Six studies assessed anticipatory pleasure using EMA/ESM. It involves prompting participants multiple times a day to report on their current or upcoming activities and their expected enjoyment from those activities, in their own environment (Shiffman and Hufford, 2008). EMA/ESM methods, capture individuals' thoughts, emotions, and behaviours in real-time and within their natural environments. These methods offer an ecologically valid way to assess anticipatory pleasure as it naturally unfolds in daily life. By prompting participants multiple times throughout the day, EMA/ESM approaches minimize retrospective bias and reveal the dynamic nature of moment-to-moment fluctuations in anticipation. As such, they are particularly well-suited to measuring state-level, rather than trait-level, experiences of pleasure. EMA/ESM methods differ in structure, but generally involve repeated measures using visual analogue scales or free response options, for

example. The duration of the recall period in these six studies varied from six days to 12 weeks. Moreover, studies varied regarding the number of daily assessments, ranging from two to seven assessments per day.

Hallford, Sharma, and Austin (2020), Li, Zhang, Huany, et al. (2019), as well as Pillny et al. (2024) stated that they measured the construct of state anticipatory pleasure. Pillny et al. (2020), Edwards et al. (2018) and Webb et al. (2024) did not explicitly define their measurement construct as state-level, they reported anticipatory pleasure as the construct they want to measure.

The only study reporting Cronbach's alpha was conducted by Pillny et al. (2020), who reported values indicating good to excellent between-subject reliability ($\alpha = 0.79 – 0.90$) across the three activity domains: anticipatory pleasure, goal-directed activity, and goal intentions. This suggests that, on average, individuals consistently differed from one another in their responses across items. While the within-subject reliability for anticipatory pleasure was lower and considered questionable ($\alpha = 0.63$). The ESM items and their scaling were taken from the German version (Engel and Lincoln, 2016) of the Motivation and Pleasure Self-Report scale (MAP-SR; Llerena et al., 2013) and were adjusted for the repeated assessment in the study. Three items were rated on a visual analogue scale with anchor points indicating: 0-100 ("*not at all motivated/ no pleasure*" to "*extremely motivated/ strong pleasure*"). The items were distinguished between three topics: (1) social, (2) recreational, and (3) self-care. Participants were asked to respond to the following items: "Looking ahead to the next two hours, how much pleasure will you experience from (1)…spending time with relatives, friends or Acquaintances; (2)…doing hobbies or recreational activities; (3)…doing self-care activities such as showering, changing clothes, toothbrushing etc."

The number of items used to assess anticipatory pleasure varied considerably across studies, ranging from one to 16 items. Webb et al. (2024) was the only study to assess

anticipatory pleasure using a single item: “How excited do you feel about it?” The item was designed to elicit a free-response indicating what participants were anticipating that day, and how strongly they were looking forward to it. Webb et al. (2024) were the only ones to report split-half reliability for this measure, which was excellent (r = .93). Pillny et al. (2024) had the most items assessing state anticipatory pleasure with 16 items. For each item, participants were asked to think of participating in certain activities within the upcoming 2 hours. For an entire week after baseline assessment, participants were prompted to answer the EMA survey on anticipatory pleasure and activity engagement six times a day, by semi randomized beeps within 2-hour intervals between 10 a.m. and 10 p.m. State anticipatory pleasure was assessed with, for example, “Look ahead the next 2 hours, how much pleasure do you experience from thinking of doing any of the following activities?” Pillny et al. (2024) did not report any psychometric properties.

The study by Edwards et al. (2018) was one of three studies (Hallford, Sharma, and Austin, 2020; Li, Zhang, Fan, et al., 2019) incorporating 2 items measuring anticipatory pleasure. Interestingly, the two items used in the study by Edwards et al. (2018) employed distinct response formats. The first item, “How much do you think you will enjoy this activity?”, was rated on a 7-point Likert scale ranging from 1 (*not at all*) to 7 (*extremely*). The second item, “What do you think are the chances this activity will occur?”, was rated on a visual analogue scale ranging from 0% to 100%.

Discussion

The aim of this thesis was to review and evaluate systematically existing self-report instruments assessing reward anticipation in (sub-)clinical populations. The instruments were analysed in terms of their psychometric qualities and their suitability to be included in future study designs.

An overview has emerged for several different instruments that measure reward anticipation. The SHAPS, TEPS, and CV-TEPS are self-report scales developed to assess (trait) anticipatory pleasure. Expectation of future emotional states questions and specific measures based on EMA/ESM are both categories for questions/items assessing affective forecasting, mood expectation and (state) anticipatory pleasure.

The psychometric quality of the measures is generally good, with the exception of the TEPS-ANT subscale of the CV-TEPS, which shows questionable internal consistency and test-retest reliability. The expectation of future emotional states items also demonstrated good quality overall, while psychometric quality of specific measures based on EMA/ ESM is most often unknown.

To address the second component of the research aim, identifying the most appropriate measure to include in future study designs, the TEPS emerges as a particularly suitable instrument. The TEPS was specifically developed to distinguish between anticipatory and consummatory pleasure, a conceptual distinction that has proven critical in the study of anhedonia and reward-related processes, especially within clinical populations such as those with mood or psychotic disorders, which aligns with the contemporary model(s) of reward processing (Berridge and Robinson, 2003; Renner et al., 2021). TEPS emerges as a particularly suitable instrument for further assessment of anticipatory pleasure.

Evaluation of Measurement Instruments

When assessing reward anticipation in (sub-)clinical populations, the choice of measurement tool is critical, given the conceptual and psychometric variability across existing instruments. The TEPS (Gard et al., 2006) appears particularly well-suited for capturing trait anticipatory pleasure. With strong internal consistency ($\alpha = .74 – .80$ for the anticipatory subscale) and robust convergent validity ($r = .80$), the TEPS provides a reliable and theoretically grounded assessment. The subscale of anticipatory pleasure is relatively brief (10

items) and user-friendly, making it a feasible option in time-constrained research or clinical settings. Its adaptability across diverse populations supports the broad global applicability. Overall, the TEPS emerges as the most comprehensive and psychometrically robust instrument for assessing trait anticipatory pleasure and may serve as a standard in future research exploring the role of reward anticipation in psychopathology.

The CV-TEPS (Chan et al., 2012) expands the original scale of the TEPS with culturally tailored items, but the internal consistency of its anticipatory subscale is more variable and questionable ($\alpha = .53 – .71$), which may limit its utility outside Chinese-speaking populations. Despite this, the CV-TEPS maintains the structural benefits of the original TEPS and remains a feasible tool for cross-cultural research when adapted appropriately. Further research into the proposed four-factor structure is still in its early stages, reflecting ongoing debates and the evolving operationalization of measurement instruments.

In contrast, the SHAPS (Snaith et al., 1995) demonstrates good internal consistency ($\alpha = .81 – .82$). However, the SHAPS assesses reward anticipation broadly, without consistently distinguishing from reward consumption. The question arises why the SHAPS was correlated with the BDI, given that depression represents a distinct construct. There is a substantial amount of additional literature, apart from the three reviewed studies employing the SHAPS, that identifies it as a self-report measure of anhedonia (Rizvi et al., 2016). Interestingly, some studies suggest that the SHAPS does measure anhedonia, specifically the diminished ability to anticipate pleasurable experiences (Franken et al., 2007; Nakonezny et al., 2015; Trøstheim et al., 2020). That is why the study by Franken et al. (2007) used the BDI for convergent validity. It is debatable whether the BDI, as a general measure of depression, is an appropriate point of comparison. Future research could explore the debate further around the SHAPS being a measure for anticipatory pleasure or anhedonia.

The SHAPS asks participants to respond based on “the past few days”, this limits its ability to assess trait anhedonia, which is more stable over time and crucial for understanding chronic affective dysfunction. This makes the SHAPS less suitable for evaluating long-term patterns. Nonetheless, its concise format (14 items) and simple 4-point response scale make it highly practical for use in clinical screening. Participants tend to find the SHAPS items accessible and easy to interpret, which contributes to high completion rates (Snaith et al., 1995). Overall, the use of the SHAPS should be approached with caution when assessing reward anticipation or anticipatory pleasure, due to ongoing conceptual debates.

Questions assessing the expectation of future emotional states represent a distinctive approach to self-report measurement employed by researchers in several studies (Mathersul and Ruscio, 2020; Thompson et al., 2017; Zetsche et al., 2019). These items aim to capture individuals' expectation of emotional responses to future events, offering valuable insight into emotional forecasting. Findings of all three studies suggest that the overall internal consistency of these self-report measures ranges from good to excellent (r = .76 - .91). Apart from the study by Mathersul and Ruscio (2020), which reported discriminant validity, no other psychometric properties were discussed in the three studies. Using self-constructed expectation of future emotional states questions may be appropriate when exploring highly context-specific constructs that existing validated measures do not adequately capture. These items can also be useful in exploratory or qualitative research aiming to generate hypotheses rather than test them. In such cases, the flexibility of tailored questions can provide rich, targeted insights that standardised tools might overlook. However, the creation of study-specific items, rather than relying on validated self-report questionnaires, can limit comparability across studies and undermine measurement reliability. Tailoring items may address context-specific goals, it does not substitute for the rigor and psychometric strength

provided by established, validated instruments. Therefore, future research would benefit from prioritizing validated tools to ensure consistency and methodological robustness.

As mentioned in the method section, although one of the inclusion criteria for this review was the reporting of psychometric properties of outcome measures, studies employing EMA/ESM methods were taken into account even when such properties were not explicitly provided. This decision was made in recognition of the unique methodological contributions of EMA/ESM, which capture dynamic, real-time psychological states in naturalistic settings. Unlike traditional psychological measures that aim to capture stable between-person traits, EMA/ESM studies focus on within-person variability (state) across time and contexts (Shiffman and Hufford, 2008). Internal consistency measures, like Cronbach's alpha, are designed to assess reliability of trait-like constructs at one time point, assuming homogeneity and temporal stability, which conflicts with EMA/ESM´s goal to assess state levels of constructs (e.g., mood, stress, craving). This approach is especially relevant in populations where motivational processes are dysregulated, such as in depression and schizophrenia where moment-to-moment shifts in anticipated pleasure may serve as critical indicators of functional capacity, psychological well-being, or treatment responsiveness (Edwards et al., 2018). EMA allows researchers to detect context-dependent variations in anticipatory pleasure, for instance in response to stressors or daily activities, and significantly reduces recall bias compared to retrospective self-report measures. EMA/ESM methods are crucial for understanding how reward-related processes operate in real-life settings, where anticipatory and consummatory aspects of pleasure may dissociate. Given these strengths, EMA/ESM methods are a robust tool for examining state-level reward anticipation in (sub-)clinical populations. Several items are currently available to measure state reward anticipation using EMA/ESM methods. However, there is a lack of comparative research examining how these items perform relative to one another. Future studies should also focus

on evaluating the psychometric quality of these measures to ensure their reliability and validity in real-world contexts.

Implications

In several studies, trait and state self-report measures of anticipatory pleasure are not clearly separated and are sometimes used interchangeably, which can obscure the interpretation of results. Future research should use terminology more carefully, making clearer distinctions and adhering to consistent definitions and references across studies.

The articles reviewed in this literature review predominantly used the concept of anticipatory pleasure rather than reward anticipation, despite reward anticipation being the central focus of this study. This raises an important conceptual question: do reward anticipation and anticipatory pleasure truly capture the same underlying construct, or are they related but distinct psychological processes?

While both constructs are linked to motivational processes that promote goal-directed behaviours aimed at achieving desired rewards, one possible difference could be the cognitive prediction of future pleasure (in anticipatory pleasure). A component that is not clearly articulated in the multiple definitions of reward anticipation, which tend to focus primarily on the wanting or motivational aspect, highlighted by Berridge and Robinson (2003).

It should also be acknowledged that reward anticipation can be further divided into anticipated reward, the expectation of how rewarding/pleasant a future activity will be, and anticipatory reward, the subjective experience of how rewarding/pleasant it is to think about a future activity (Renner et al., 2021). While both aspects fall under the umbrella of reward anticipation, they involve distinct psychological processes, specifically, cognitive estimation (anticipated reward) versus affective simulation (anticipatory reward) (Renner et al., 2021). This distinction is crucial, especially in clinical settings, where depression may involve reduced anticipated reward (pessimistic future appraisals) or blunted anticipatory reward

(difficulty generating positive emotional responses to imagined events). It could also help resolve the conceptual confusion between anticipatory pleasure and reward anticipation by highlighting that anticipatory pleasure may be considered a component of anticipated reward or, conversely, that reward anticipation could encompass aspects of anticipatory pleasure.

Understanding these differentiations helps shed light on inconsistent findings in the literature and clarifying these distinctions is critical for improving the precision of measurement tools and for advancing theoretical models of reward anticipation. Future research should focus on further establishing and refining the construct of reward anticipation itself, to ensure conceptual consistency across studies.

Limitations

One limitation of this review is the absence of a second independent evaluator during article screening and selection. Relying on a single reviewer may have introduced selection bias and reduced methodological rigor. Although inclusion and exclusion criteria were consistently applied, the lack of inter-rater reliability assessment may have affected the consistency of inclusion decisions. Future reviews should incorporate a second evaluator to enhance transparency and validity/ the review's credibility by minimizing individual bias or oversight. Future reviews should consider employing screening by a minimum of two persons to ensure greater transparency and validity of the findings.

A key limitation of this study is the reliance on a single database (PsycINFO), which may have restricted the comprehensiveness of the literature review by excluding potentially relevant studies indexed in other databases, thereby limiting the generalizability and of the findings.

Although the search terms were carefully chosen, potentially relevant synonyms were missed (e.g., anticipatory anhedonia) which might have yielded interesting results.

The lack of stricter or more clearly defined inclusion and exclusion criteria, especially regarding EMA/ESM studies, may have introduced variability in study quality and limited the interpretability of the aggregated results.

Another notable limitation is that the three separate studies for the expectation of future emotional states questions assess different constructs (mood expectation and affective forecasting), which complicates the interpretation and comparison of their findings for this review.

Focusing solely on self-report measures could also be considered a limitation. In general, self-report instruments have inherent drawbacks, such as subjectivity and response bias. However, some aspects of reward processing, particularly subjective experiences like anticipatory pleasure, may be more accessible and measurable through questionnaires than through behavioural or physiological methods.

This review did not report all existing self-report measures that assess reward anticipation or related constructs to reward anticipation. Other self-report questionnaires are, for example, the Fawcett-Clark Pleasure Scale (FCPS; Fawcett et al., 1983), and, more recently, the Anticipatory and Consummatory Interpersonal Pleasure Scale **(**ACIPS; Gooding and Pflum, 2014). Future research could review these and other questionnaires, possibly by searching other databases.

Conclusion

This thesis provided a comprehensive overview of available self-report measures assessing reward anticipation in (sub-)clinical populations. It highlighted the diversity in conceptualizations, methodologies, and psychometric quality across instruments. While several measures show promise, inconsistencies in reliability, particularly at the state level, limit comparability across studies. Future research should prioritize the development and validation of self-report measures that clearly distinguish between trait and state components

of reward anticipation, as well as the conceptualization of anticipatory pleasure and reward anticipation as measured constructs.

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Appendix A

PsycINFO Search String

Search Field Number	Search String
#1	(TI (“anticipat*” OR “expect*” OR “future*” OR “prospective”)) W0 (“reward*” OR “pleasure*” OR “positive emotion*” OR “positive affect*”) OR “affective forecasting” OR “emotional future-oriented thoughts” OR “positive prospective mental images”
#2	AND “rating scales” OR instrument* OR questionnaire* OR interview* OR measure* OR assessing* OR assessment* OR screening* OR ema OR esm OR “ecological momentary assessment*” OR “experience sampling” OR diary OR “self-report*” OR “self-report questionnaire” OR “ambulatory assessment*”
#3	AND (clinical or “clinical practice” or psychopathology or symptoms or subclinical or “mental disorder” or “emotional disorder” or “mental disease” or anhedonia or depression or schizophrenia or mdd or major depressive disorder or schizophrenic or eating disorders or ADD or ADHD or dsm or addiction)
#4	NOT animal OR “prediction error” OR eeg OR fmri OR mri

Note. The search string contains synonyms of relevant study characteristics and Boolean operators (e.g., AND, OR, NOT).

Appendix B

Studies Included in Review

Authors	Self-report measures	Language of Assessment	Population
Li, Zhang, Huany, et al. (2019)	SHAPS, CV-TEPS, EMA	Chinese	n = 51 dysphoric individuals, n = 56 non-dysphoric controls
Pillny et al. (2024)	SHAPS, EMA	German	n = 43 individuals with schizophrenia spectrum disorder, n =43 healthy controls
Webb et al. (2024)	SHAPS, EMA	English	n = 39 adolescents with elevated anhedonia
Da Silva et al. (2017)	TEPS	English	n = 84 outpatients with schizophrenia, n = 81 healthy controls
Dolan et al. (2022)	TEPS	English	n = 124 adult women with eating disorders, n = 84 healthy control women
Dolan et al. (2023)	TEPS	English	n = 71 with full and subthreshold avoidant/restrictive food intake disorder, n = 33 healthy controls
Hallford, Barry, et al. (2020)	TEPS	English	n = 117 with a major depressive episode, n = 47 without
Hallford, Sharma, and Austin (2020)	TEPS, EMA	English	n = 10 with a current major depressive disorder (MDD) (single or recurrent)
Horne and Quigley (2024)	TEPS	English	n = 85 dysphoric, n = 79 non-dysphoric participants
Rosebrock et al. (2021)	TEPS	English	n = 128 having persistent persecutory delusions in the context of non-affective psychosis
Li et al. (2015)	CV-TEPS	Chinese	n = 176 MDD patients, n = 346 schizophrenia patients, n = 268 healthy controls
Li, Zhang, Fan, et al. (2019)	CV-TEPS	Chinese	n = 130 obsessive compulsive disorder patients, n = 89 with a MDD, patients, n = 95 healthy controls
Wang et al. (2015)	CV-TEPS	Chinse	n = 22 schizophrenia patients with prominent negative symptoms, n = 18 schizophrenia patients without prominent negative symptoms, n = 29 healthy controls

Mathersul and Ruscio (2020)	Expectation of Future Emotional States questions	English	n = 145 adults with generalized anxiety disorder (GAD), MDD, or comorbid GAD/MDD
Thompson et al. (2017)	Expectation of Future Emotional States questions	English	n = 31 individuals with Bipolar I, n = 21 with MDD, n = 32 healthy controls
Zetsche et al. (2019)	Expectation of Future Emotional States questions	German	n = 34 individuals with a present Major Depressive Episode, n = 41 matched healthy individuals
Edwards et al. (2018)	ESM	English	n = 36 individuals with schizophrenia, n = 44 healthy control group
Pillny et al. (2020)	ESM	German	n = 22 patients with schizophrenia, n = 14 schizoaffective disorder, n = 36 healthy controls

Note. This table summarizes the 18 studies included in the systematic literature review, highlighting characteristics: the self-report measures and language used, and the (sub-)clinical populations studied.