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Do you want a description with that wine? The role of wine mental imagery in consumer's desire to drink using the revised Vividness of Wine Imagery Questionnaire (VWIQ-II)

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Abstract

The influence of general wine imagery vividness on consumers' reported desire to drink was investigated. In Study 1, the Vividness of Wine Imagery Questionnaire (VWIQ) was revised and validated so that it included the dimensions of sight, smell, flavor, and mouthfeel. Mouthfeel is an important factor in wine appreciation, both for consumers and wine experts. In Study 2, we demonstrated the usage of VWIQ in a consumer context: participants were asked to indicate their desire to drink a range of wines that differed in familiarity, with half the participants also receiving a multisensory description of the wine in addition to information regarding the wine's geographical origin and grape variety. Without a description, consumers with higher imagery vividness reported higher desire to drink compared with consumers with lower imagery vividness. However, with a description, the desire to drink from the lower imagery vividness group increased, matching the higher imagery vividness group.

Practical application

The ability to imagine helps people to plan for the future. In effect, imagery ability can influence how consumers make purchase decisions. Sensory descriptions thus seemed to override differences in people's ability to imagine a wine. In summary, this research demonstrates the value of VWIQ as a tool to tailor advertisements and wine descriptions to specific groups of consumers.

1 | INTRODUCTION

When people imagine something, for example, upon reading a story or a description, they draw on past experiences to (re-)activate mental representations (e.g., Kosslyn, 1995; Kosslyn, Thompson, & Ganis, 2006; Nanay, 2015; Thomas, 2006). By definition, mental imagery is primarily a private experience, and this makes measuring imagery in an objective way, difficult. The primary method to measure imagery is by asking the participant to self-report the vividness of the imagined experience (Cumming & Eaves, 2018; McAvinue & Robertson, 2007). Research has shown that self-reported vividness is correlated with brain activity in areas linked to the modalities in which the image is reported (Bergmann, Genç, Kohler, Singer, & Pearson, 2016; Cui, Jeter, Yang, Montague, & Eagleman, 2007; Djordjevic, Zatorre, Petrides, Boyle, & Jones-Gotman, 2005; Flohr et al., 2014; Fulford et al., 2018), is correlated to activity in brain areas responsible for episodic memory (Tibon, Fuhrmann, Levy, Simons, & Henson, 2019), and imagery reported to be more vivid disrupts performance on tasks that use working memory for the same modalities more than imagery reported as being less vivid (Arterberry & Craver-Lemley, 2001; Baddeley & Andrade, 2000; Tomiczek & Stevenson, 2009). Lacey and Lawson (2013), after reviewing a large

number of available questionnaires, concluded that, especially in applied domains, questionnaires measuring imagery vividness are "set to survive as a complementary and useful technique (p. 272)." This underscores that self-reported imagery vividness, thus, is a valid way to assess imagery ability.

Survey studies using questionnaires measuring imagery vividness have suggested that people markedly differ in their ability to imagine objects in different modalities: most people are capable of forming a vivid visual image or sound in their "mind's eye and ear," but Western people report less vividness for imagined smells, tastes, and haptic experiences (i.e., touch) (Andrade, May, Deeprose, Baugh, & Ganis, 2014; Lawless, 1997; White, Ashton, & Brown, 1977). Imagery vividness seems to depend on cultural experiences (Marsella & Quijano, 1974; Noll et al., 1985), as well as professional experiences: Studies on expert perfumers, chefs, musicians, and wine experts show more vivid imagery for experiences in their domain of expertise (Bensafi, Tillmann, Poncelet, Przybylski, & Rouby, 2013; Croijmans, Speed, Arshamian, & Majid, 2020; Gilbert, Crouch, & Kemp, 1998), suggesting imagery is not an ability that is fixed at birth but can be improved through specific experience.

That people differ in their ability to imagine is interesting, since what happens in our mind's eye, ear, nose, and mouth, can affect our cognitive and physical behavior (Gregg, Hall, & Nederhof, 2005; Herbert & Pollatos, 2012; Kosslyn et al., 2006). According to Moulton and Kosslyn (2009), the primary function of imagery is building predictions for the future, by using past experiences. This includes complex problem-solving, for example, imagining hypothetical possibilities predicted by physical theory, such as time travel, or more everyday problems such as buying shoes online and imagining whether a certain color would match most of the other items in your wardrobe. The idea of embodiment predicts that an image or a description will have the observer or reader engage in mental simulation of that image or description, to allow cognitive processing of it (Barsalou, 2008; Krishna & Schwarz, 2014). Moreover, neuroimaging studies have shown that people also mentally interact with imagined objects: Seeing an image of a cup or a hammer activates sensorimotor areas that are also activated during a real grasping movement (Tucker & Ellis, 1998), and reading the word "cinnamon" activates olfactory cortex areas that are also activated when smelling cinnamon (González et al., 2006). Similarly, pictures of food can induce feelings of appetite and activate brain areas connected to taste and reward (Simmons, Martin, & Barsalou, 2005). What is important to stress is that mental simulation, although not the same, is crucial for mental imagery (Baddeley & Andrade, 2000; Barsalou, 2008; Kosslyn & Moulton, 2012). Nevertheless, measuring vividness in mental imagery is informative for predicting the strength of mental simulation, and the ability to perform other cognitive manipulations with an imagined object.

Consumers use mental simulation to assess how they would benefit from a product: how it would taste, smell, or generally, how it might improve their life (Elder & Krishna, 2010; Krishna & Schwarz, 2014). Sensory marketing uses the insights of embodiment in marketing, to find a closer match between what the consumer wants and what a product may offer. For example, Elder and Krishna (2012) found that when they manipulated pictures in a particular way so that it was easier to engage in mental simulation, their purchase intention for the products in those pictures increased. In line with this, findings from Topolinski, Lindner, and Freudenberg (2014) show that engaging in sensory activities while watching ads, for example, eating popcorn when watching ads for other foods, the act of eating interfered with the success of the advertisement, resulting in lower purchase intention. However, since people differ in their ability to engage in imagery, from a tailoring point of view, it is important to consider the imagery ability of consumers: whereas some people might experience elaborate mental scenes from reading a mere sentence, others may never experience mental images at all (e.g., in congenital *aphantasia*; Keogh & Pearson, 2018; Zeman, Dewar, & Della Sala, 2016). Similarly, for people who easily engage in vivid imagery, a description may evoke imagery that interferes with other visual and auditory information in an advertisement if these are not congruent or provide non-matching information.

Consumers have turned to the internet to purchase products online, in ever-increasing numbers (UNCTAD, 2020). While vision and sound are dimensions that can be easily conveyed through digital media, sending virtual smells and tastes remains a huge technological challenge (Olofsson et al., 2017; Petit, Velasco, & Spence, 2019). For these modalities, the reliance is on language to convey sensory information. This is especially salient in the domain of food purchases – groceries in general, but more specifically, more luxurious consumer goods such as specialty coffee and tea, chocolate, and wine. Not surprisingly, smell and taste are the primary sensory modalities with regards to food choice and consumption behavior (Boesveldt et al., 2018), and mere descriptions of food can drive bodily markers for appetite and desire, for example, salivation, an effect found to be driven by forming mental images (Krishna, Morrin, & Sayin, 2014). Smell imagery can even negatively impact the effect of advertisements if the content of the smell image is negative or incongruent with the advertisement content (Lin, Cross, Laczniak, & Childers, 2018). Here, we focus on wine. Wine, even when imagined, might be called a truly multisensory experience (cf. Nanay, 2018; Spence, 2019), with salient aspects with respect to its color, smell, taste, and touch (mouthfeel). Previous studies into wine imagery have focused on three primary sensory modalities salient for wine: color (vision), smell, and taste (Croijmans, Speed, Arshamian, & Majid, 2019; Croijmans & Speed et al., 2020). However, wine can be experienced in other modalities too. Wine is a highly complex beverage with a number of chemical components that affect the perceived sensory experience besides smell and taste. The amount of alcohol, glycerol, and dissolved sugars affect the perceived fullness of the wine by modifying viscosity, and tannins alter the perceived astringency by binding with proteins in saliva (Moreno & Peinado, 2012). The amount of carbonation present further affects the perceived tactile experience of wine (Gawel, 1998; Sáenz-Navajas, Campo, Fernández-Zurbano, Valentin, & Ferreira, 2010). This complex interplay of tactile experiences is often called *mouthfeel*. Wine mouthfeel has its own vocabulary (Gawel, Oberholster, & Francis, 2000), which takes up a reasonable part of domain-specific vocabulary in wine reviews (Croijmans, Hendrickx, Lefever, Majid, & Van Den Bosch, 2020), and in turn can affect consumer's liking of a wine and the emotions they experience when consuming it (Niimi, Danner, Li, Bossan, &

Bastian, 2017). In addition, wine experts often report that when blind tasting wine, mouthfeel is one of the primary factors that may give away a wine's identity and is an important part of a holistic wine quality concept (Sáenz-Navajas et al., 2016). This merits an update of the previous investigations into wine imagery that would include mouthfeel as a pertinent dimension of the wine experience.

By investigating wine imagery vividness in consumers and its relationship to desire to drink, with further implications toward their willingness to purchase wine displayed in online advertisements, the relationship between imagery and consumer behavior and motivation can be explored to enable better consumer segmentation and tailored marketing in the future. With this research question in mind, here we present two studies. The first study was set out to validate an extension to the Vividness of Wine Imagery Questionnaire (VWIQ; Croijmans et al., 2019), which included mouthfeel as a dimension. This revised questionnaire was validated using factor analysis, reliability analysis, and analyses of external validity. The second study applied the updated VWIQ to investigate the effect of wine imagery on consumers' desire to drink when seeing advertisements that did or did not include an elaborate sensory description of the wine's flavor. Previous research has shown that presenting information about food in multiple sensory dimensions has stronger effects on consumers' expectations of food: when participants read multisensory descriptions of food, they rated the actual food to taste better than when only singular aspects of the food were described (Elder & Krishna, 2010). Specific aspects of a wine label, such as the font or the description, can influence consumer purchase intention in different ways (Danner, Johnson, Ristic, Meiselman, & Bastian, 2017; Escandon-Barbosa & Rialp-Criado, 2019; Gmuer, Siegrist, & Dohle, 2015). For example, Danner and colleagues found that more elaborate descriptions on the bottle led to higher willingness to pay in consumers (Danner et al., 2017). At the same time, research indicates that the effect of advertisements differs depending on the person who sees the advertisement (e.g., Lin et al., 2018; Mohanty & Ratneshwar, 2016; Yoo & Kim, 2014): for instance, the effectiveness of smell metaphors in advertisement depends on how good people report being at imagining odors (Lin et al., 2018). Similarly, we expect people's wine imagery ability to modulate the effectiveness of online wine presentation. More specifically, we expect that multisensory descriptions would enhance the desire to drink a particular wine regardless of people's imagery ability; however, when the sensory description is not included, we would expect those who can form more vivid multisensory wine imagery to report a higher desire to drink.

2 | METHODS STUDY 1

2.1 | Ethics statement

Methods of both studies were carried out in accordance with the declaration of Helsinki and the Netherlands' code of conduct for research integrity. The study was approved by the Ethics Committee of the Faculty of Social and Behavioral Sciences of Utrecht University, and filed under number FETC20-432. Informed consent was obtained from all participants, who were all over 18 years old. All materials, data and analyses files can be downloaded from https://osf.io/5vjpx/files/.

2.2 | Questionnaire modification

The mouthfeel modality was added to the VWIQ (Croijmans et al., 2019) as a modification. The original version of the VWIQ consists of six "scenes" that the participant is asked to imagine, for example, "Imagine you are visiting a sunny vineyard and order a glass of your favorite sparkling wine on their outdoor terrace." They are then asked to rate different aspects of the wine in this scene, that is, the color ("The colour of the wine as the sun is reflected in your glass"), smell ("The smell of the wine as you sniff it in your glass"), and taste ("The taste of this wine as you have a sip"), on a five-point rating scale ranging from "1—No image at all (only 'knowing' that you are thinking of the object)" to "5—Perfectly clear and as vivid as the real situation."

Modification of the VWIQ (VWIQ-II) consisted of adding a question to rate mouthfeel ("The feeling of the wine in your mouth") in each scene from the original VWIQ, with slight variations per scene (see Online supplementary materials S1 for the original VWIQ and Appendix Table A1 for the modified VWIQ-II).

2.3 | Questionnaire validation

2.3.1 | Participants

Following Kass and Tinsley (1979) and Field (2009), 5–10 times the number of participants as the number of variables was aimed for. To check the sample size adequacy assumption, the Keyser–Meyer–Olkin (KMO) measure of sampling adequacy was also calculated during the statistical analysis. To account for potential dropouts and have sufficient power for the other analyses planned, we aimed to recruit 200 participants. In the final participant sample, 199 participants (M_{age} = 38.1 years, SD_{age} = 14.1; 123 women, 75 men, 1 person choose not to disclose gender) completed the survey. Of these, 27 participants reported to smoke sometimes, and 17 participants reported to smoke daily. Five participants reported to be somewhat impaired in their sense of smell, and one person reported a complete absence of smell. Participants reported a wide range of educational backgrounds. Of the participants, 99 participants (M_{age} = 40.3 years, SD_{age} = 14.1; 60 women, 39 men) also completed the follow-up questionnaire.

2.3.2 | Materials

Apart from the newly modified VWIQ-II described above, a number of questionnaires were used to establish the external validity of the new questionnaire, in line with Croijmans et al. (2019). These are described below.

To measure the general vividness of visual imagery, the *Vividness of Visual Imagery Questionnaire* was used (Marks, 1973). The VVIQ contains 16 statements describing visual scenes (e.g., *The overall appearance of the shop from the opposite side of the road*). Participants are instructed to imagine each scene and rate how vivid their mental images are using the same five-point scale as the VWIQ, but reversed (i.e., a low score means high vividness). Participants are instructed to complete the questionnaire twice: once with their eyes open and once with their eyes

closed. The total score is averaged across the two occasions. The minimum score on the VVIQ is 16 (high vividness), and the maximum score is 80 (low vividness). The VVIQ was previously attested to be a reliable and valid instrument (Marks, 1989). The internal consistency of the VVIQ in the current administration was $\omega = .901$ (averaged over both administrations), indicating good reliability.

To measure the general vividness of olfactory imagery, the Vividness of Olfactory Imagery Questionnaire (Gilbert et al., 1998) was used. The VOIQ contains 16 statements describing olfactory scenes (e.g., *The smell of your shirt or blouse when you remove it*). Participants are instructed to imagine each scene and rate how vivid their mental images are using the same five-point scale as the VVIQ. The minimum score on the VOIQ is 16 (high vividness), and the maximum score is 80 (low vividness). The VOIQ was previously attested to be a reliable and valid instrument (Gilbert et al., 1998). The internal consistency of the VOIQ in the current administration was $\omega = .899$, indicating good reliability.

The *Plymouth Sensory Imagery Questionnaire* (PSI-Q; Andrade et al., 2014) measures vividness of imagery in seven sensory domains: vision, sound, touch, taste, smell, bodily sensations, and feelings. In the original version, each sensory domain has five items such as "*Imagine the appearance of a bonfire*." To shorten the administration, Andrade et al., recommend the use of the three most discriminating items for each sensory domain, which we followed here. Participants are instructed to rate their mental image on an 11-point scale from 0 (*no image at all*) to 10 (*as vivid as real life*). Each sensory domain, therefore, had a minimum score of 0 and a maximum score of 30.

The PSI-Q was previously demonstrated to be a reliable and valid instrument (Andrade et al., 2014). The internal consistency of the PSI-Q in the current administration was $\omega = .921$ (for the entire scale), indicating good reliability.

The wine knowledge test (WKT) was used to assess participant's knowledge of wine, as a proxy to their wine expertise (cf. Croijmans & Majid, 2016). This questionnaire contains eight items asking about the typical color of grape types, seven items assessing wine knowledge (e.g., *Which wine is made with Flor yeast*?), and three items about wine experience (*How often do you drink wine? How many glasses of wine do you drink per week? How much have you read about wine?*). The correct answers on the first 15 questions are added up to a score. In previous studies (Croijmans, Speed, et al., 2020), wine experts scored on average 13.6 ($SD = 1.2$), whereas consumers scored on average 7.9 ($SD = 2.2$) on this questionnaire.

Demographics and background. Participants also completed a number of general demographic and background questions, reported under participants: gender, education, smell disorders, and smoking.

2.3.3 | Procedure

Participants were recruited using the online participant recruitment platform Prolific (www.prolific.com). Participants were selected based on their first language (English) and purchasing/drinking wine on a regular basis. This was done using the respondent preselection criteria provided by Prolific.

Participants completed the survey always in the same order: VWIQ-II, VVIQ, VOIQ (eyes open, eyes closed), PSI-Q, WKT, demographic and background questions. Right after the VWIQ-II, participants could answer an open-ended question asking for their opinion of the VWIQ-II. After completing the survey, participants were asked whether they wanted to be invited for a short follow-up study in a week time (phase 2). This Phase 2 consisted of only the VWIQ-II, and was to assess the test–retest reliability of the newly modified questionnaire. Participants were paid 2.25 GBP or completion of the initial phase, and 1 GBP for phase 2. On average, participants took 18.83 minutes ($SD = 10.4$ min) to complete the first phase. Phase 2 took, on average, 4.21 minutes ($SD = 5.4$ min) to complete. All participants were instructed and tested in English.

2.3.4 | Data analysis

We analyzed the data by first looking at variance distributions per item. Assumptions for factor analysis were checked, and exploratory factor analysis (EFA) was performed for the entire scale. Fit indices were interpreted following Dima (2018). After this, classic test theory measures of internal consistency (Cronbach's alpha and McDonald's omega) were calculated for each modality dimension and for the entire scale, as well as test–retest reliability measures (typical error, change from the mean, and correlation between test occasions). Finally, to test convergent validity, we calculated correlations between the scores on the VWIQ-II visual domain and scores on the VVIQ and PSI-Q visual subscale; between the VWIQ-II olfactory domain and the VOIQ and PSI-Q smell subscale; and between the VWIQ-II taste and mouthfeel domain and the PSI-Q taste and touch subscales. In addition, the correlation between the overall scores among these questionnaires and the WKT was calculated. It was expected that wine knowledge would correlate with the vividness of wine imagery, in line with Croijmans, Arshamian, Speed, and Majid (2020).

3 | RESULTS STUDY 1

3.1 | Data inspection

The data were inspected per item. The item distributions were somewhat negatively skewed but nevertheless showed that all answer options were used, and that there was enough variance in every item present. Bartlett's test, χ^2 (276) = 3,438, $p < .001$, suggested sphericity among the items, and the KMO index (overall MSA = 0.91) suggested adequate sampling, which indicated the assumptions for EFA were met.

3.2 | Dimensional structure

The EFA, restricted to four factors with maximum likelihood extraction and oblimin rotation showed four factors that explained 57.3% of

the variance. However, questions did not load with the expected modalities but seemed to load together with questions from similar scenes instead (see Table 1). Most questions from Scene 1, 3, and 4 loaded together, presumably because these scenes revolve around wine tastings (i.e., Scene 1 in a vineyard, Scenes 3 and 4 at an organized tasting event). Questions from Scene 5 (visiting a bistro) loaded together, similar to questions from Scene 6 (having a glass of wine at home). The questions from Scene 2 (eating stew at a restaurant) and the mouthfeel questions from Scene 1 and 4 loaded together on a fourth factor. Fit for this four-factor model was mediocre, with RMSEA = 0.12 [0.11–0.13], TLI = 0.75, and χ^2 (186) = 716, $p < .001$.

The EFA was repeated with factor extraction based on parallel analysis. With a solution of seven factors, 68% of the variance in the data was explained. This analysis largely confirmed that questions loaded with their respective scenes instead of the modalities (Table 2), with the notable exception for color with color items from Scene 1, 2, 3, and 4 loadings on the sixth factor. Fit indices indicated a better fit for this model compared with the four-factor model, with RMSEA = 0.079 [0.067–0.091], TLI = 0.89, and χ^2 (129) = 288, $p < .001$.

As a last option, a single-factor model was tried, informed by the idea that all items measure wine imagery. All items loaded >0.3 on this single factor, and the solution explained 43.4% of variance, RMSEA = 0.15 [0.14–0.16], TLI = 0.62, and χ^2 (252) = 1,363, $p < .001$.

These factor analyses seem to suggest wine imagery is highly context-dependent, but also that the different modalities are all a key part of the construct of wine imagery: wine imagery seems holistic, without the modalities being distinct aspects of the experience. This finding is in line with the idea that mental imagery in one modality affects (imagined) perception in another modality (Nanay, 2018). The analysis does underscore that mouthfeel as an added modality very much fits with the existing modalities of the VWIQ.

TABLE 1 Factor loadings for a four-factor model

	Factor				
	1	2	3	4	Uniqueness
VWIQ_5_C	0.901				0.282
VWIQ_5_S	0.806				0.234
VWIQ_5_T	0.716				0.259
VWIQ_5_M	0.630				0.236
VWIQ_3_S		0.718			0.334
VWIQ_4_S		0.638			0.435
VWIQ_4_T		0.536			0.510
VWIQ_3_T		0.522			0.462
VWIQ_1_S		0.439			0.526
VWIQ_3_C		0.431			0.643
VWIQ_3_M		0.386	0.371		0.406
VWIQ_4_C		0.365			0.738
VWIQ_1_T		0.347			0.560
VWIQ_1_C	0.301	0.321			0.704
VWIQ_6_M			0.794		0.170
VWIQ_6_T			0.740		0.215
VWIQ_6_S			0.607		0.324
VWIQ_6_C			0.598		0.503
VWIQ_2_M				0.814	0.202
VWIQ_2_T				0.733	0.296
VWIQ_1_M				0.473	0.415
VWIQ_2_S		0.400		0.442	0.396
VWIQ_4_M		0.361		0.368	0.571
VWIQ_2_C					0.820

Note: "Maximum likelihood" extraction method was used in combination with a "oblimin" rotation. Item loadings <0.3 are suppressed. *Uniqueness* expresses the unique variance of each variable not explained by the factors.

3.3 | Classic item theory

Internal consistency, in the form of Cronbach's alpha and McDonald's omega, was calculated as an indication for reliability, for each dimension and for the entire scale (Table 3). For the individual dimensions, inter-item and item-total correlations of the respective items were all $r > 0.3$, with none of the items improving internal consistency when dropped. For the full scale, inter-item correlations ranged from 0.18 to 0.80, and item-rest correlations ranged from 0.39 to 0.75. Cronbach's alpha and McDonald's omega for the entire scale were 0.95 and 0.95, respectively, indicating very high internal consistency.

Correlations among different dimensions (Table 4) further suggested the modality dimensions were independent aspects of wine imagery, but also, in line with the factor analysis that considerable overlap exists between the modalities making up the full construct of wine imagery.

3.4 | Test–retest reliability

The test–retest analysis showed the questionnaire was highly reliable and stable over time, with little and nonsignificant differences between test occasions, and medium to high correlations between tests (see Table 5).

3.5 | Convergent and external validity

Convergent and external validity were tested by calculating the correlations between the VWIQ and the VVIQ, VOIQ, PSI-Q, and WKT. As hypothesized, the VWIQ color dimension correlates with the VVIQ, $r = -0.45$, $p < .001$, and with the PSI-Q vision subscale, $r = 0.33$, $p < .001$. The VWIQ smell dimension correlated significantly with the VOIQ, $r = 0.48$, $p < .001$, and PSI-Q smell subscale, $r = 0.38$, $p < .001$. The VWIQ taste dimension correlated with the PSI-Q taste dimension, $r = 0.28$, $p < .001$. And the VWIQ mouthfeel dimension correlated

TABLE 2 Factor loadings, extraction based on parallel analysis

	Factor							
	1	2	3	4	5	6	7	Uniqueness
VWIQ_5_C	0.851							0.220
VWIQ_5_T	0.791							0.167
VWIQ_5_S	0.785							0.148
VWIQ_5_M	0.589							0.214
VWIQ_6_S		0.850						0.117
VWIQ_6_T		0.709						0.173
VWIQ_6_M		0.666						0.196
VWIQ_6_C		0.649				0.311		0.385
VWIQ_2_M			0.853					0.176
VWIQ_2_T			0.712					0.291
VWIQ_2_S			0.513				0.376	0.310
VWIQ_1_M			0.471					0.421
VWIQ_3_T				0.907				0.152
VWIQ_3_M				0.657				0.249
VWIQ_3_S				0.578				0.300
VWIQ_1_T								0.558
VWIQ_4_T					0.963			0.134
VWIQ_4_S					0.697			0.327
VWIQ_4_M					0.563			0.475
VWIQ_3_C				0.418		0.502		0.422
VWIQ_4_C						0.467		0.553
VWIQ_2_C			0.402			0.415		0.646
VWIQ_1_C						0.362		0.611
VWIQ_1_S							0.418	0.432

Note: "Maximum likelihood" extraction method was used in combination with a "oblimin" rotation. Item loadings <0.3 are suppressed. *Uniqueness* expresses the unique variance of each variable not explained by the factors.

TABLE 3 Scale reliability statistics

	Mean	SD	Cronbach's α	McDonald's ω
VWIQ_Color	3.66	0.72	0.79	0.79
VWIQ_Smell	3.14	0.85	0.87	0.87
VWIQ_Taste	3.32	0.80	0.85	0.86
VWIQ_Mouthfeel	3.27	0.90	0.88	0.88
VWIQ_Total	3.35	0.73	0.95	0.95

significantly with the PSI-Q touch dimension, $r = 0.42$, $p < .001$. Overall, the imagery questionnaires correlated highly, with the VWIQ total scale correlating with the VVIQ, $r = -0.45$, $p < .001$; with the VOIQ, $r = 0.48$, $p < .001$; and with the PSI-Q total scale, $r = 0.46$, $p < .001$. These correlations show that whereas the constructs measured are not perfectly similar (which would be indicated by high to very high correlations), they are very much related, as expected from theoretically related constructs. This suggests good convergent validity of the new VWIQ mouthfeel subscale and of the VWIQ in general.

To test whether imagery was related to wine knowledge in this sample, as would be expected from previous literature (Croijmans, Speed, et al., 2020), correlations between the different dimensions of the VWIQ and the wine knowledge test were calculated. This analysis suggested that, in line with the idea that experience shapes cognition, including mental imagery for wine, wine knowledge was related to imagery vividness for wine, with positive and statistically significant correlations (*r*s ranging 0.155–0.234, *p*s ranging 0.029–0.001). This analysis is visualized in Figure 1.

This study confirmed the validity of the extended version of the VWIQ. The significant correlations among the sensory modalities of wine imagery and between mouthfeel imagery and wine knowledge merited the addition of this dimension into the construct of wine imagery. Looking at the average vividness ratings across different sensory modalities (Figure 2), in line with previous work (Croijmans, Speed et al., 2019), the visual appearance of the wine was rated most vivid, and the smell least vivid. Additionally, consumers seem able to imagine the included mouthfeel dimension as well as they can imagine the taste of wine. Next, we applied the revised VWIQ to investigate the relationship between wine imagery and consumer's desire to drink

TABLE 4 Correlation matrix for dimensions and total scores of the VWIQ

		VWIQ COLOR	VWIQ SMELL	VWIQ TASTE	VWIQ MOUTHFEEL	VWIQ TOTAL
VWIQ_COLOR	Pearson's *r*	—				
	p value	—				
VWIQ_SMELL	Pearson's *r*	0.632	—			
	p value	< .001	—			
VWIQ_TASTE	Pearson's *r*	0.610	0.793	—		
	p value	< .001	< .001	—		
VWIQ_MOUTHFEEL	Pearson's *r*	0.630	0.740	0.847	—	
	p value	< .001	< .001	< .001	—	
VWIQ_TOTAL	Pearson's *r*	0.798	0.898	0.922	0.917	—
	p value	< .001	< .001	< .001	< .001	—

TABLE 5 Test–retest reliability (typical error), change from mean, and retest correlations

	Typical error *M* and SD ($n = 99$)	Change from mean *t* (p) ($n = 99$)	Retest correlations *r* (p) ($n = 99$)
VWIQ_Color	0.04 (0.59)	0.68 (0.497)	0.67 (<0.001)
VWIQ_Smell	−0.01 (0.55)	−0.25 (0.805)	0.78 (<0.001)
VWIQ_Taste	0.02 (0.53)	0.31 (0.758)	0.78 (<0.001)
VWIQ_Mouthfeel	0.07 (0.59)	1.09 (0.277)	0.78 (<0.001)
VWIQ_Total	0.03 (0.44)	0.63 (0.528)	0.81 (<0.001)

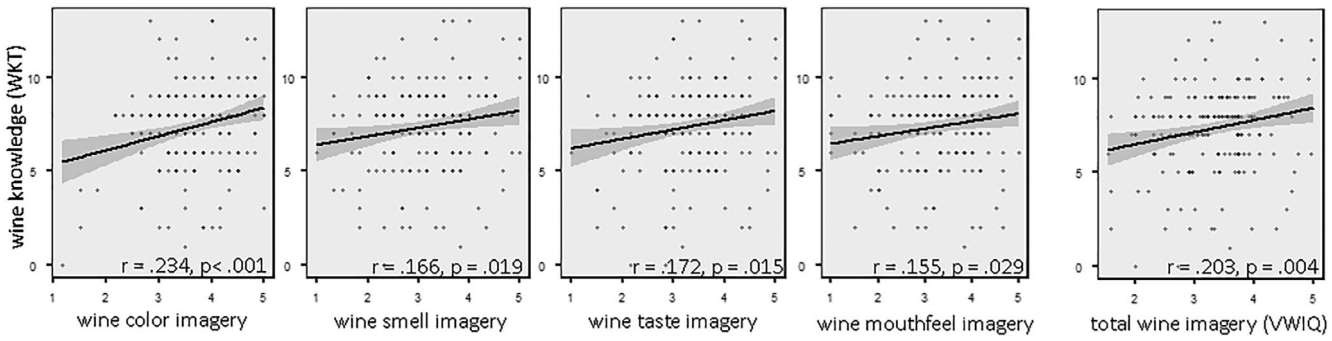

FIGURE 1 Graphs with correlation plots for the different dimensions of the VWIQ and wine knowledge (WKT)

wine, after seeing wine advertisements containing different experimentally varying levels of information.

4 | METHODS STUDY 2

4.1 | Background and hypotheses

We decided to conduct a follow-up study to assess the applicability of VWIQ scores in a consumer setting. With the advent of online wine shopping, consumers rely on back-of-the-label information as well as any descriptions or expert reviews provided by the website to make their purchase choices (e.g., Friberg & Grönqvist, 2012). The question here is whether reading about sensory descriptions of a wine might predict someone's desire to drink, and whether this effect might be moderated by individual factors such as wine imagery ability. To this end, we set up an online study where participants imagined tasting wines of different familiarity levels. While all participants were given information regarding the grape variety, vintage, and country and region of origin, only half the participants were also provided with a sensory description of the wine.

We hypothesized that:

Hypothesis H1. In the no-description condition, people with higher VWIQ would have a higher desire to drink the wines than people with low VWIQ, since they would be able to imagine the taste experience of the wine more vividly.

Hypothesis H2. In the sensory description condition, there would be no impact of VWIQ scores on one's desire to drink, since the provided sensory description would free people from having to undergo the cognitively effortful task of forming an imagined experience of the wine (c.f. Stevenson & Case, 2005).

4.2 | Participants

Two hundred participants (M_{age} = 37.0 years, SD_{age} = 13.4; 147 women, 53 men) completed the survey. Of these, 30 participants reported to smoke sometimes, and 16 participants reported smoking daily. Wine knowledge test scores (M_{WKT} = 8.61, SD_{WKT} = 2.10) were in line with novice scores shown in previous studies (in Croijmans, Arshamian, et al., 2020: M = 7.91, SD = 2.2; in Croijmans & Majid, 2016: M = 9.6, SD = 1.77; in Croijmans, Speed, et al., 2020: M = 7.2, SD = 2.8; and M = 7.9, SD = 2.2).

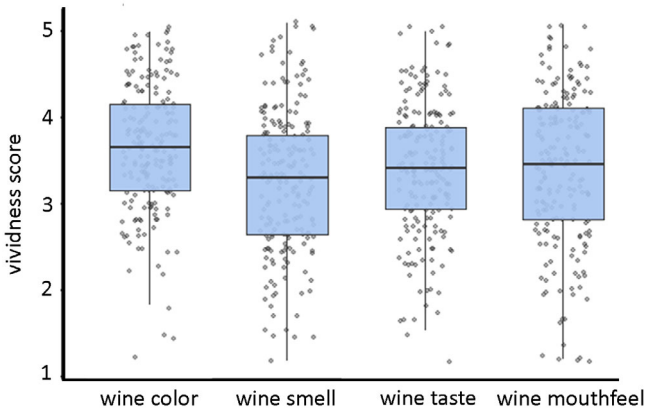

FIGURE 2 Boxplots for the scores of the different dimensions of the VWIQ. In boxplots, the middle line denotes the median; the boundaries of the box denote upper and lower quartiles, whereas whiskers denote 1.5 times the inter-quartile range. Dots denote individual data points

4.3 | Materials

The first part of Study 2 consisted of a wine evaluation task, which is composed of six trials featuring six different wines. The wines were selected by two Wine and Spirits Education Trust (WSET) diploma holders to cover a range of familiarity levels for the UK market (Table 6). Familiarity was defined as how often consumers would be expected to have tasted the type of wine previously, type as defined by the combination of country, region, and grape variety. This decision was based on knowledge of the UK wine market and the types of wines most commonly sold, both on-trade (e.g., restaurants) and off-trade (e.g., supermarkets). To maximize ecological validity, all wines were available for purchase via an online UK wine merchant and retailed at a similar price point.

On each trial, participants viewed some information about a wine and were asked to imagine tasting the wine. All participants were shown an image of the wine bottle and information consisting of grape variety, country of origin, region of origin, and vintage. Half the participants (randomly assigned to the sensory description condition) also viewed a sensory description of the wine, including the color, smell, taste, mouthfeel, flavor, and finish (Appendix Table A2). The sensory description was written by a certified WSET educator based on tasting notes available from the wine producer and online retailer.

After 15 s of an imagined wine tasting exercise, participants were able to move onto the next page, where they were asked how much they would like to drink the particular wine, and how familiar they are with wines made from the specific grape variety from the specific country. Informed by the theory of planned behavior (Ajzen, 1991; Perugini & Bagozzi, 2001), desire to drink is highly predictive of whether a consumer would actually purchase a given product if the opportunity arises. To control for personal biases, participants were also asked, if applicable, how much they tend to like wines from the specific country, and how much they tend to like wines made with the specific grape variety. All questions were shown via seven-point

TABLE 6 Wines used in the wine evaluation task in Study 2

Wine	Country	Region	Grape variety	Vintage	Retail price (GBP)	Familiarity
1	New Zealand	Marlborough	Sauvignon blanc	2017	12.00	High
2	Argentina	Mendoza	Cabernet sauvignon	2017	13.00	High
3	South Africa	Stellenbosch	Chenin blanc	2017	13.00	Medium
4	United States	California	Zinfandel	2017	14.00	Medium
5	Greece	Mantinia	Moscafilero	2018	12.50	Low
6	Uruguay	Canelones	Tannat	2018	13.50	Low

Note: All wines were selected to have similar ages and retail pricing while covering a different range of familiarity levels for the UK consumer.

scales anchored from 1 = not at all to 7 = very much. The six trials were presented in random order.

The rest of the study consisted of VWIQ-II, WKT, and demographics and background. VWIQ-II and WKT were identical to what was used in Study 1. In the demographics and background section, participants reported their age, gender, English proficiency, and smoking habits.

4.4 | Procedure

As in Study 1, participants were recruited using Prolific. Since this study involved wines designed to be familiar/unfamiliar to consumers in the UK market, we targeted participants who currently live in the United Kingdom, in addition to having English be their first language and regularly purchasing/drinking wine. As in Study 1, *this was done using the respondent preselection criteria provided by Prolific*. To avoid familiarity effects with the VWIQ-II test, participants who participated already in Study 1 were ineligible to sign up for Study 2.

Participants explicitly gave their consent before the study began. Participants completed the survey in the same order: wine evaluation task, VWIQ-II, WKT, demographic and background questions. Half the participants in the wine evaluation task ($N = 100$) were randomly assigned to the sensory description condition, while the other half were in the no-description condition. See Appendix Table A3 for an overview of the demographic information per group. Participants were paid 1.25 GBP upon completion of the study. On average, participants took 13.12 min (SD = 5.26 min) to complete the study.

4.4.1 | Data analysis

VWIQ-II and WKT scores were treated the same way as in Study 1. Participants scored a median of 81 points, or on average 3.38 per question, on wine imagery vividness (VWIQ-II total score), comparable with previous studies on wine imagery vividness scores for novices (Croijmans, Speed, et al., 2020: novices: $M = 3.17$, SD = 0.73; experts: $M = 3.84$, SD = 0.65). A median split on the VWIQ-II score was used to categorize the participants as either high ($N = 101$, $M = 3.83$, SD = 0.37) or low ($N = 99$, $M = 2.87$, SD = 0.40) in terms of wine imagery vividness. Demographic data in each group are shown in Appendix A3. We validated wine familiarity levels chosen in the study by analyzing reported wine familiarity using repeated measures ANOVA with wine familiarity (three levels: low, medium, high) as the within-subjects factor. Next, to test the hypothesis that desire for the wine would be influenced by the presence of sensory description as well as participants' wine imagery vividness, the desire to drink scores were compared among groups using mixed ANOVA, with wine familiarity (three levels: low, medium, high) as a within-participants factor; and description condition (two levels: yes vs. no sensory description) and wine imagery vividness (two levels: low, high) as between-participants factors. Corrections in the degrees of freedom for sphericity assumption violations were applied where appropriate. Post hoc pairwise comparisons were Bonferroni corrected.

5 | RESULTS PART 2

5.1 | Validation of wine familiarity

As designed, wines at selected levels of familiarity had a significant effect on reported familiarity ($F[2,398] = 195.86$, $p < .005$, $\eta_p^2 = 0.50$), with participants rating Wines 1 and 2 as significantly more familiar than Wines 3 and 4, which are significantly more familiar than Wines 5 and 6 ($M_{high\_familiarity} = 3.63$, SD = 1.79, $M_{medium\_familiarity} = 3.16$, SD = 1.81, $M_{low\_familiarity} = 1.61$, SD = 1.19, $p < .005$ across all pairwise comparisons).

5.2 | Hypothesis testing

Overall, mixed ANOVA revealed that wine familiarity had a significant main effect on desire to drink ($F[2,195] = 46.11$, $p < .005$, $\eta_p^2 = 0.21$), with participants across description conditions reporting greater desire to drink more familiar wines ($M_{high\_familiarity} = 4.46$, SD = 1.76, $M_{medium\_familiarity} = 4.04$, SD = 1.73, $M_{low\_familiarity} = 3.60$, SD = 1.65, $p < .005$ across all pairwise comparisons). In addition, there was a main effect of wine imagery vividness ($F[1,196] = 7.89$, $p = .005$, $\eta_p^2 = 0.04$), where those in the high wine imagery vividness group reported greater desire to drink than those in the low vividness group. That said, the main effect needs to be interpreted in the context of a significant interaction effect between description condition and wine imagery vividness ($F[1,196] = 7.02$, $p = .009$, $\eta_p^2 = 0.04$, Figure 3). Pairwise comparisons revealed that, as hypothesized in H1, in the no sensory description condition, those in the high wine imagery vividness group reported greater desire to drink than those in the low vividness group ($M_{high\_imagery} = 4.34$, SD = 1.64, $M_{low\_imagery} = 3.60$, SD = 1.76, $p < .005$). In contrast, as predicted in H2, in the sensory description condition, there was no significant difference in desire to drink between the two wine imagery vividness groups ($M_{high\_imagery} = 4.13$, SD = 1.72, $M_{low\_imagery} = 4.11$, $SD = 1.78$, $p = .911$). Figure 4 illustrates the interaction among wine familiarity, label condition, and wine imagery vividness. There was no main effect of description condition ($F[1,196] = 1.42$, $p = .235$), and no interaction effects between wine familiarity and any between-participants variables (familiarity and description condition: $F(2,392) = 0.36$, $p = .700$; familiarity and imagery vividness: $F(2,392) = 1.67$, $p = .189$).

6 | DISCUSSION

In the present two studies, we validated the updated VWIQ questionnaire to include mouthfeel in addition to the existing dimensions of wine color, smell, and taste. Moreover, we demonstrated the role of mental imagery in a consumer context, where we found that not only was higher wine imagery vividness associated with a greater desire to drink but there was also an interaction effect between wine imagery ability and the presence of a multisensory sensory description, where differences in wine imagery ability ceased to influence the desire to drink once a description was provided.

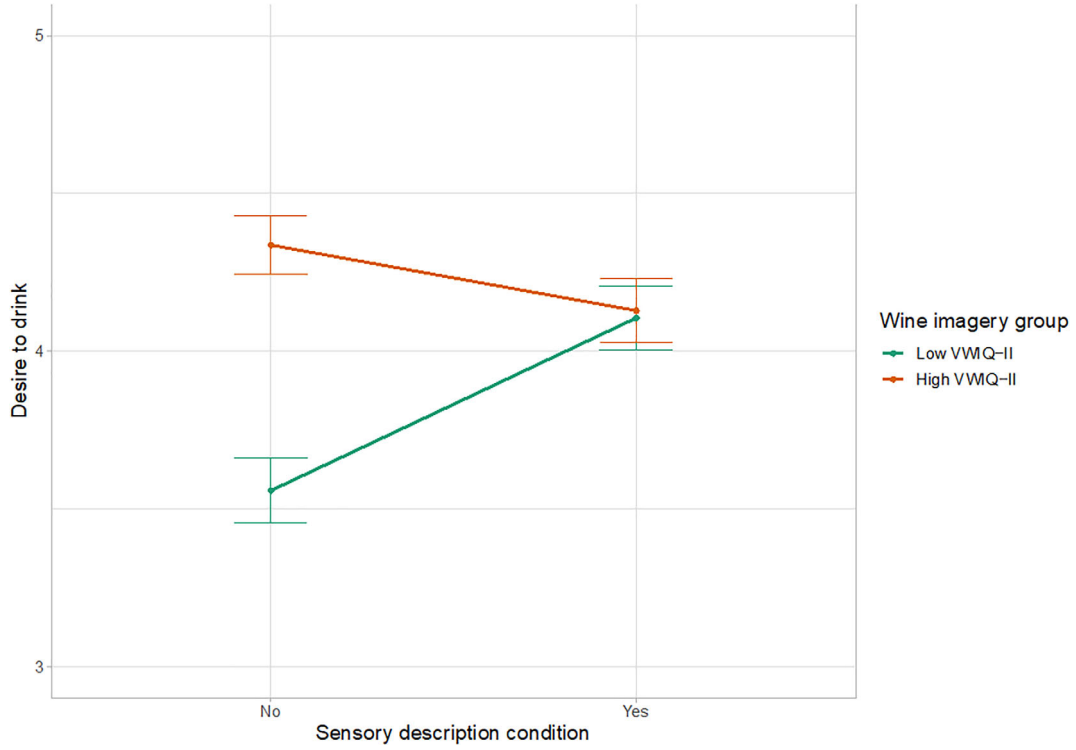

FIGURE 3 Average desire to drink rating of wines in the two sensory description conditions (no description, with sensory description) for those in the low and high wine imagery vividness group. Error bars indicate the standard error of the means

These results show that, in general, consumers who report high imagery vividness for wine also report more desire to drink than consumers who report low imagery vividness. Another broad trend was that all consumers reported more desire to drink more familiar wines across the board. First, the effect of familiarity is in line with previous studies, where familiarity was found to be one of the primary drivers for consumer decisions: people tend to rate products they know as more desirable and potentially having more benefits than products they do not know (e.g., Fischer & Frewer, 2009). While the consumers with high imagery vividness did report a higher desire to drink the wines, there was no interaction between familiarity and imagery ability, suggesting the familiarity effect is the same across different populations. As Figure 4 shows, there is an additive effect, where both familiarity and wine imagery ability contributed to the desire to drink, at least when people were not shown textual descriptions of the wines.

Next, the results showed a qualified effect of the presence of a multisensory wine description on the desire to drink. In line with hypothesis H1, when the sensory description was not shown, those with higher VWIQ reported a higher desire to drink (and thus, purchase behavior; Perugini & Bagozzi, 2001; Danner et al., 2017) for a particular wine compared with those with lower VWIQ. On the other hand, when the sensory description was shown along with geographical and varietal information about the wine, we did not observe any effect of imagery ability on desire to drink (H2). This suggests that the presence of a sensory description may overrule the cognitively effortful task of forming a mental image (cf. Stevenson & Case, 2005), even for people with vivid imagery. A sensory description, therefore, acts as a nonliteral, or metaphorical description for the flavor of the wine. Research on metaphors has shown that figurative language is highly effective in communicating a message: people effortlessly understand metaphors (Glucksberg, 2003; Glucksberg, Gildea, & Bookin, 1982; Glucksberg & McGlone, 2001). In wine, this seems to be a highly productive strategy to convey flavor (Caballero, 2007; Paradis & Eeg-Olofsson, 2013; Suárez-Toste, 2007). When describing different types of metaphors used in wine, Paradis and Eeg-Olofsson (2013) distinguish among synesthetic metonymies, that is, using source descriptions such as "tires" and "cherries" on the one hand, and synesthetic metaphors and similes, such as "tastes like a cage-fighter" on the other. Whether metaphors of the second simile type are just as or more effective in conveying information and convincing consumers about wine flavor is a topic for future studies. Research on the use of metaphors in advertisements did suggest that the level of incongruity, or how far the metaphor's source domain (e.g., cage fighting) is from the target domain (i.e., wine), seems instrumental in whether an advertisement is successful or not (e.g., Mohanty & Ratneshwar, 2016). Since the descriptors in the current study were written following guidelines of standardized wine education (i.e., WSET), we primarily employed metonymies in the descriptors used (i.e., the first category), from diverse source domains (e.g., fruits, spices, flowers) that may be found regularly in wine vocabulary (cf. Croijmans, Hendrickx, et al., 2020).

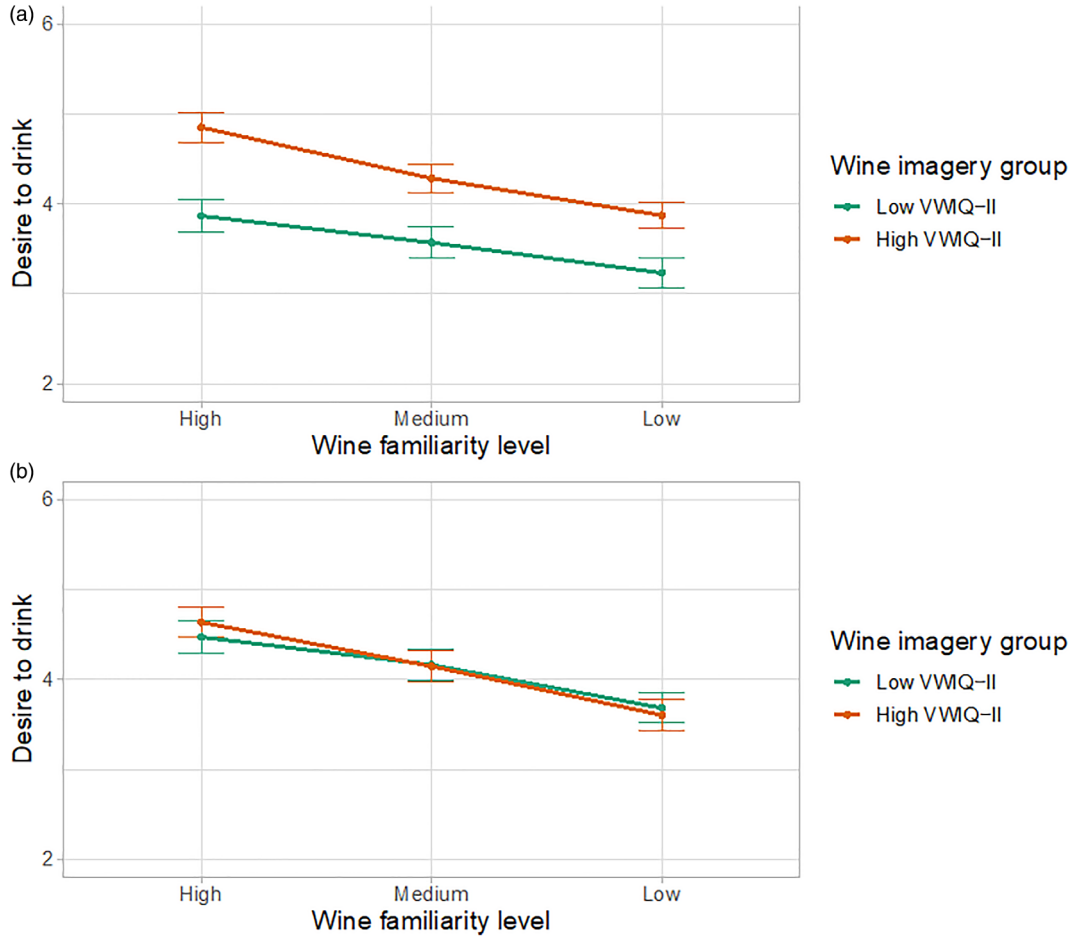

FIGURE 4 Average desire to drink rating of wines across wine familiarity levels for those in the low and high wine imagery vividness group in (a) the no-description condition and (b) sensory description condition. Error bars indicate the standard error of the means

From a practical perspective, these findings demonstrate that providing a sensory description for the wine consumer with low imagery vividness will increase the desire to drink across all wine familiarity levels (Figure 4a). This is an important aspect to consider for both wine producers and wine retailers who want to increase their consumer base to include more novices, who tend to have lower wine imagery vividness (Croijmans, Speed, et al., 2020). With sales happening online more frequently, the addition of a sensory description that describes the appearance, smell, flavor, and mouthfeel of a wine, in addition to the geographical and/or varietal information already on the bottle, can help consumers make more informed choices. On the other hand, a sensory description may not induce a greater desire to drink in consumers who already have stronger wine imagery. Instead, they might benefit more from other cues, such as information on origin (terroir), grape variety, and vinification processes (cf. Danner et al., 2017; Ribeiro, Corsi, Lockshin, Louviere, & Loose, 2020; Williamson, Lockshin, Francis, & Loose, 2016). The current study did not manipulate this information, but future work may focus on the relative impact of different types of information on people with different wine imagery capabilities.

One limitation of this study is that only participants from Great Britain were recruited. Great Britain is a wine-consuming country but does not have any large-scale domestic wine production; therefore, British consumers rely mainly on purchasing imported wines (Richie, 2007). Policies regarding the sales of alcohol, cultural differences around social drinking behavior, or low awareness of viticultural and vinification practices, may all result in a different stance of British consumers toward wine than consumers in other (wine-producing) countries such as Germany, France, or other English-speaking countries such as the United States or Australia. Future studies, therefore, might focus on the consumers differing at a country level, focusing on traditional "old-world" or "new-world" wine-producing countries, or new wine markets, such as China. Therefore, comparing the impact of descriptions in different countries may result in surprising findings. Wine descriptions, including metaphors (cf. Creed, 2013; Ibarretxe-Atunano, 2008), may be understood differently, depending on the language the consumer speaks or where they live, since language and cognition are shaped by (cultural) experience (e.g., Mazzuca, Majid, Lugli, Nicoletti, & Borghi, 2020; Jameson, 2005; Majid, Bowerman, Kita, Haun, & Levinson, 2004).

In conclusion, this set of studies supports the inclusion of wine mouthfeel as a valuable dimension of wine and presents a valid instrument (the updated VWIQ) to measure imagery vividness for wine in the dimensions of color, smell, taste, and mouthfeel. The instrument is relatively easy to complete for a wide audience, as was shown by this set of studies, and offers ecologically valid scenes that people, consumers, and experts alike report to enjoy, making it a suitable questionnaire for wine sales settings. Likewise, the instrument is easily added to controlled, experimental sensory trials to elicit flavor descriptions or test recognition memory for complex flavors, to better understand the relationship between imagery vividness and other mental processes. The content of the different scenes may be slightly modified to closely match the wine samples presented during such practical trials, or the wine samples may be selected based on the content of the different scenes in the VWIQ. In addition, the results of the second study reveal that this instrument has immediate practical applicability to tailor consumer information, for example, in stores: including a sensory description can help consumers with low imagery vividness better imagine the drinking experience, therefore increasing their desire to drink (and purchase) the wine.

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AUTHOR CONTRIBUTIONS

Both authors were responsible for conceptualization and methodology of the study. Both authors were responsible for data collection and pre-processing for Study 1. Data collection and pre-processing of Study 2 were done by Qian Janice Wang. Formal analysis including visualization for Study 1 was performed by Ilja Croijmans and critically reviewed by Qian Janice Wang. Formal analysis including visualization for Study 2 was performed by Qian Janice Wang and critically reviewed by Ilja Croijmans. The original draft of the manuscript was written by Ilja Croijmans with input and critical revisions from Qian Janice Wang.

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SUPPORTING INFORMATION

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APPENDIX A.

TABLE A1 Items of the VWIQ-II

The following part of the questionnaire contains six sections. In each section, you will be given a description of a scene followed by four statements related to the scenario given. After reading each question, please close your eyes to construct a mental image of the described object or scene. Once your image of this scene has been formed, open your eyes to rate the mental image you constructed. You will do this for each different scenario-based mental image requested.	
You are then asked to rate how vivid several aspects of the image are on the following scale:	
1 No image at all (only "knowing" that you are thinking of the object)	
2 Vague and dim	
3 Moderately clear and vivid	
4 Clear and reasonably vivid	
5 Perfectly clear and as vivid as the real situation	
Scene 1	**Imagine you are visiting a sunny vineyard and order a glass of your favorite sparkling wine on their outdoor terrace.**
VWIQ_1_Color	The color of the wine as the sun is reflected in your glass
VWIQ_1_Smell	The smell of the wine as you sniff it in your glass
VWIQ_1_Taste	The taste of this wine as you have a sip
VWIQ_1_Mouthfeel	The feeling of the wine in your mouth
Scene 2	**You are in a restaurant and are eating a stew. Imagine you have selected the wine for the table and it is being served.**
VWIQ_2_Color	The color of the wine when the waiter spills some on the tablecloth
VWIQ_2_Smell	The smell of the wine as you place your nose in the glass
VWIQ_2_Taste	The taste of the wine
VWIQ_2_Mouthfeel	The feeling of the wine in your mouth
Scene 3	**Imagine you are going to a short wine tasting where you will try several different wines. The tasting starts with a French white wine (a Sauvignon Blanc)**
VWIQ_3_Color	The color of the wine when the hostess pours a little bit in your glass
VWIQ_3_Smell	The smell of the wine when you smell it in your glass
VWIQ_3_Taste	The taste of the wine when you have a sip of it and swirl it in your mouth
VWIQ_3_Mouthfeel	The feeling of the wine in your mouth when you swirl it in your mouth
Scene 4	**You have tasted several wines, and the hostess presents the last wines for the tasting.**
VWIQ_4_Color	The color of a white wine, a Chardonnay, that she gives you to try
VWIQ_4_Smell	The smell of the next red wine you try, a Pinot Noir
VWIQ_4_Taste	The taste of this red wine (Pinot Noir) when you try and taste the wine
VWIQ_4_Mouthfeel	The mouthfeel of the final wine of the evening, a red Port wine
Scene 5	**You are in a bistro. You are having a light lunch, and you have selected a wine to pair with it.**
VWIQ_5_Color	The color of the wine when the waiter pours you some to try
VWIQ_5_Smell	The smell of the wine when the waiter asks you to check it
VWIQ_5_Taste	The taste of the wine when you have your first sip
VWIQ_5_Mouthfeel	The feeling of the wine in your mouth
Scene 6	**Imagine you are having a relaxing night at home and decide to have a casual glass of white wine to unwind, intended to be consumed fresh.**
VWIQ_6_Color	The color of the wine when you swirl it round in your glass
VWIQ_6_Smell	The smell of the wine when you place your nose in the glass to smell it
VWIQ_6_Taste	The taste of the wine when you have a sip and swirl it in your mouth to taste it
VWIQ_6_Mouthfeel	The feeling of the wine in your mouth

TABLE A2 Images of wine bottles and sensory descriptions used in the wine evaluation task in Study 2

Wine	Name	Image	Sensory description
1	Manuka Springs Sauvignon Blanc 2017		This pale water-white wine has pronounced aromas of gooseberry, guava, and passion fruit. In the mouth, it has a little initial spritz leading to a smooth mouthfeel. This wine has crisp acidity and pronounced flavors of gooseberry and guava, with a long citrus finish.
2	Herencia Trabajo Cabernet Sauvignon 2018		This deep purple wine has pronounced aromas of blackberry, black cherry, and cassis with a savory touch of vanilla, cedar, and tobacco. In the mouth, the tannins are firm yet smooth. This wine has high acidity and pronounced fruit flavors with a long oaky finish.
3	Vinum Chenin Blanc 2017		This pale lemon-colored wine has moderately intense aromas of cut grass, fresh pineapple, and white peach. In the mouth, it has a creamy texture. This wine has crisp acidity and mineral-laden flavors with a granitic dry finish.
4	Granite Hill Old Vine Zinfandel 2017		This deep purple wine has pronounced aromas of blackberry jam. In the mouth, it has velvety and soft tannins. This wine has fresh acidity in balance with pronounced flavors of blackberry, strawberries, and peppercorn, with a long spicy finish.
5	Semeli Feast White 2018		This pale lemon-colored wine has pronounced aromas of rose petals and Turkish delight. In the mouth, it has a watery texture. This wine has gentle acidity and pronounced flavors of lemon and lychee, with a medium fruity finish.
6	Viña Las Brujas Tannat 2018		This deep purple wine has pronounced aromas of blackberry and vanilla. In the mouth, it has smooth tannins and a silky texture. This wine has fresh acidity and pronounced flavors of dark plums, quince, and eucalyptus, with a medium oaky finish.

TABLE A3 Demographic information for low and high VWIQ-II score group, including number of participants, mean age, gender distribution, smoking habits, wine knowledge test score, and total VWIQ-II score

	Low wine imagery	High wine imagery
N	99	101
Mean age (SD)	36.8 (13.6)	37.2 (13.2)
Gender	68 women	79 women
Smoking	11 smoke sometimes, 7 smoke daily	19 smoke sometimes, 9 smoke daily
Mean WKT score (SD)	8.09 (2.12)	9.13 (1.94)
Overall VWIQ-II score (SD)	68.98 (9.61)	91.88 (8.81)