

Better the devil you know? How product familiarity affects usage versatility of foods and beverages

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ARTICLE INFO

Article history:

Received 20 March 2015

Received in revised form 26 January 2016

Accepted 9 February 2016

Available online 20 February 2016

JEL classification:

D83

D84

M30

PsycINFO classification:

3900

3920

Keywords:

Situational appropriateness

Usage situations

Product familiarity

Versatility of use

Consumer research

Kiwifruit

Wine

Chocolate

Fruit

ABSTRACT

Appropriateness of use evaluations can be used to explore consumers' associations between products and usage situations. The degree of familiarity consumers have with a certain product has recently been suggested as a mediator of these evaluations, influencing both the number and the type of associations consumers hold with food and beverages. In this work, we extend previous results across multiple product categories, hereby generalizing the findings. Four consumer studies were conducted using fruit names ($N = 246$), white wine images ($N = 112$), chocolate bar images ($N = 192$), and kiwifruit images ($N = 302$) as test stimuli. In each study, consumers rated their perceived familiarity with each stimulus and evaluated the appropriateness of use in a range of situations relevant to the product category. Familiarity was confirmed as a moderator of appropriateness of use evaluations, and was positively linked to product versatility. Since familiarity is related to an individual's exposure to a product, this could indicate that consumers use past experience with a product as a heuristic for their appropriateness evaluations. The variance in appropriateness evaluations explained by familiarity alone was, however, limited, and product-context associations were also contingent upon specific product characteristics. Taken together, the four studies reported here confirm that product familiarity is related to usage versatility, and indicate that consumers may find it challenging to envisage how unfamiliar food products can be incorporated into their existing dietary practices.

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1. Introduction

1.1. Product familiarity and appropriateness of use

The important role that situational variables play in shaping consumer preferences and choice is well documented by past research (e.g., Belk, 1974, 1975; Meiselman, 2008). The usage situations of a product is an ecological factor that can orient consumer choices by imposing constraints over the choice set and direct context-appropriate solutions (Ratneshwar &

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Shocker, 1991; Warlop & Ratneshwar, 1993). Accordingly, a basic tenet in food choice research is that food/beverage products are, at least in part, chosen (or not) because they are more (or less) appropriate for specific usage situations (Marshall, 1993, 1995; Meiselman, 2008).

Informed by this understanding, methods for investigating perceived product characteristics in specific usage situations have emerged. For instance, the item-by-use (IBU) appropriateness method (Schutz, 1988, 1994) has been applied to several food and beverage categories for evaluating how well a food product fit a range of possible usages (e.g., Jaeger, 2000, 2003; Lähteenmäki & Tuorila, 1997; Raats & Shepherd, 1992). In this analytical approach, one uses judgmental data to depict how consumers perceive a focal set of product alternatives in relation to specific situations. It is conceptually very similar to the substitution-in-use approach, which is well-known in the marketing literature (Ratneshwar & Shocker, 1991). The accepted view is that appropriateness measures are more predictive of behavior than simple acceptance testing (Marshall, 1995; Marshall & Bell, 2003), and the IBU method is considered a valid proxy for consumer food choice in specific use situations (Cardello & Schutz, 1996; Marshall, 1995; Schutz, 1988).

Knowledge of the product variables that moderate judgments of appropriateness of use is hitherto incomplete. However, it is probable that perceived appropriateness of a food/beverage is influenced by multiple factors – both intrinsic and extrinsic to the product – including cultural norms (Rozin, 2006), sensory preferences (Lähteenmäki & Tuorila, 1997), and specific sensory properties (Hersleth, Bergen, Westad, & Martens, 2005).

It has been suggested that product familiarity – defined here as a consumer's subjective evaluation about his or her knowledge about a product on the basis of previous experience (Park & Lessig, 1981) – is an important factor in shaping appropriateness of use evaluations (Giacalone et al., 2015; Jaeger, Rossiter, & Lau, 2005; Tuorila, Meiselman, Cardello, & Leshner, 1994). The rationale behind this assertion is that familiarity is strongly related to consumers' past experience with a product, and many people use their past behavior as a heuristic for later decisions (e.g., Albarracin & Wyer, 2000; Taylor, 1975). That is, when people are asked to make a behavioral decision (e.g., choosing between product alternatives), they generally assume the decision they made at an earlier point in time would similarly apply to the present situation, leading them to repeat the previous behavior. In psychology, this is known as “familiarity heuristic” (Tversky & Kahneman, 1974), and its underlying mechanism is two-fold. According to cognitive dissonance theory (Festinger, 1957; Wicklund & Brehm, 1976) familiar products may be preferred based on the desire to be consistent and identify reasons legitimating previous acts. The dissonance reduction mechanism is based on an active search of memory and on recall of prior knowledge about a past behavior. However, the familiarity heuristic may work regardless of any deliberate cognitive effort (Albarracin & Wyer, 2000). For example, a consumer may simply reason that, if they used a given product in a given situation, it must be appropriate. Accordingly, it would be expected that, *ceteris paribus*, appropriateness evaluations for familiar products be higher than similar evaluations for unfamiliar products.

Perceived product appropriateness has several implications for economic behavior in the food and beverage domain. Several papers, chiefly in the wine literature, have documented a link between appropriateness for specific usage situation and consumer choice. This line of research points to situational fit being one of the most important considerations in product choice (Hall & Lockshin, 1999; Hall, Lockshin, & O'Mahony, 2001; Sirieix, Remaud, Lockshin, Thach, & Lease, 2011), and suggests that adding the usage situation to product and consumer characteristics can improve prediction of consumer behavior and provide a better basis for product positioning and advertising (Dubow, 1992).

Understanding the relationship between familiarity and appropriateness, on the other hand, might be highly relevant for explaining frequency of purchase. Generally, consumers have little incentive to sample unfamiliar foods and beverage, and therefore familiar products may be routinely chosen because they are more readily available and more likely to enter the consideration set because of e.g. previous satisfactory consumption experiences. On the other hand, when consumers are evaluating a product in relation to a specific usage, and/or are generally unfamiliar with the product category as a whole, a more cognitively effortful product evaluation (but one that is not biased by a simple heuristic) is likely to be attempted. If we accept this premise, product familiarity should likely be a strong predictor of repeat purchase at least when consumers make generic food provisioning decisions (“stocking up” the household pantry with no particular end usage in mind) (Giacalone et al., 2015). Although not usually considered at the level of specific products, such relationship is known to exist with regards to brands, where previous research suggests that familiarity with a brand increases the probability that it will be considered for purchase (e.g., Coates, Butler, & Berry, 2004; Gigerenzer & Gaissmeier, 2011; Hoyer & Brown, 1990).

1.2. Motivation for the present research

The influence of product familiarity on food-related behavior has previously been studied in relation to product preferences (e.g., Giacalone, Duerlund, Bøegh-Petersen, Bredie, & Frøst, 2014; Lévy, MacRae, & Köster, 2006), sensory perception (e.g., Labbe, Damevin, Vaccher, Morgenegg, & Martin, 2006) and risk perception (e.g., Fischer & Frewer, 2009; Jin & Han, 2014).

Only recently was the relationship between product familiarity and appropriateness of use explicitly considered in experimental research, namely in a series of studies focusing on consumers' evaluations of beer (Giacalone et al., 2015). It was found that as product familiarity increased, products were perceived as appropriate for a larger number of uses. Conversely, for unfamiliar beers consumers experienced greater difficulty in identifying appropriate uses. In other words, product familiarity was positively related to product *versatility*, defined in this context as the total number of situations a product is perceived as appropriate for.

These results suggested a tendency to use past behavior as a basis for inferring product appropriateness; a finding that aligns with the familiarity heuristic principle outlined above. A limitation of this initial work (Giacalone et al., 2015) was that

all studies focused on a single product category (beer), rendering the ability to generalize results difficult. Whether or not the findings extend to other product categories is the question under investigation in the present work.

Four product categories were considered – fruit types, white wines, chocolate bars, and kiwifruit – purposefully chosen to vary in terms of their role in peoples' diets. The first study included product names for different types of fruit as focal stimuli. This decision was motivated by previous research on the topic indicating that consumers consider familiar and novel fruits appropriate for different uses (Jaeger et al., 2005). Fruit types included differed in size, seasonal availability, etc., hereby spanning the familiarity continuum. The stimuli in the second study were images of white wines, which varied in product familiarity, and included different brands and price points, hereby replicating the approach adopted by Giacalone et al. (2015). To further enhance the ability to generalize the results from this research, the third and fourth study removed brand and price influences. Specifically, Study 3 (chocolate) included products from a single brand at similar price points, while Study 4 (kiwifruit) included unbranded product concepts.

The remainder of this paper is presented study-by-study and finishes with a general discussion.

2. Study 1: Fruit names

2.1. Participants (Study 1)

Two-hundred and forty-six adult New Zealand consumers (56.9% women) took part. Their age varied between 18 and 60 years old (18–30 y.o. = 28.5%; 31–45 y.o. = 39% and 46–60 y.o. = 32.5%). Participants were recruited by a marketing research provider and received cash compensation for their time. They completed the study as part of a central location test (CLT) that investigated consumers' responses to a range of foods and beverages. Written voluntary informed consent was obtained before commencing the study.

2.2. Stimuli (Study 1)

Nineteen names of fruit were used as stimuli: Apples, Bananas, Cherimoya, Dragonfruit, Feijoas, Gooseberries, Grapes, Kiwifruit, Loquat, Lychees, Mangoes, Oranges, Passionfruit, Pawpaw/Papaya, Peaches, Persimmon, Pineapple, Raspberries, Tamarillo. They represented types of fruit present in the NZ marketplace at the time of the study, and were chosen to vary with respect to familiarity, as assessed by pilot testing and previous research (Jaeger et al., 2005).

2.3. Experimental procedures (Study 1)

For each of the fruit names, participants elicited item-by-use (IBU) appropriateness responses for the following 16 use situations: "As a healthy alternative to other snacks", "As part of a dessert", "As part of breakfast", "Before bed", "For children", "For energy", "For something a bit more sophisticated", "For use in juices/smoothies", "For variety in my fruit consumption", "In a green salad", "Something I can't resist", "Something that is quick and easy", "To eat on its own", "To indulge myself", "To share with others", and "When riding in a car". Participants were asked to indicate which of the listed usage situations each of the fruit names were considered appropriate for. Responses were obtained using a check-all-that-apply (CATA) question, since this format has been previously used in similar research (Giacalone et al., 2015), and is easy and intuitive for consumers. The presentation order of usage situations was randomized across participants, but fixed within participants, to reduce possible bias in responses, as recommended when this question format is used for sensory product characterization (Ares et al., 2013).

A balanced incomplete block design, with each participant evaluating ten fruit names, was employed in this study, since pilot work had indicated that a full design would make the task too long and burdensome for participants. Apart from this, the procedures for data collection were identical to those in Giacalone et al. (2015).

Product familiarity was rated on a 5-pt scale with extreme anchors 1 = "not at all familiar" and 5 = "extremely familiar" (Giacalone et al., 2015; Raju, 1977). The average time to complete the task was ~10 min.

2.4. Data analysis (Study 1)

The same data analytical strategy used by Giacalone et al. (2015) was applied.

First, an analysis of variance (ANOVA) on mean product familiarity ratings was performed in order to assess whether the intended variation in product familiarity was achieved. Pairwise mean comparisons were performed with Tukey's HSD test, to uncover which pairs of fruit types differed from each other.

Then, differences between product stimuli with regards to perceived appropriateness in different usage situations were assessed by Cochran's Q test, as commonly applied for CATA questions (Meyners, Castura, & Carr, 2013).

In order to assess relationship between familiarity and use versatility, negative binomial regression (Gardner, Mulvey, & Shaw, 1995) was used to model the total number of checked usage situations given the product familiarity ratings. A generalized R^2 was computed to aid model interpretation according to the maximum likelihood method¹, i.e.:

$$R^2 = 1 - (L_0/L_M)^{2/n}$$

¹ In commercial software packages this is often referred to as "Cox-Snell" pseudo R^2 .

where L_0 is the value of the likelihood function for a model with only the intercept, L_M is the likelihood for the model being estimated, and n is the sample size.

Finally, logistic regression was used to assess the influence of product familiarity on perceived appropriateness for specific usage situations. Odd ratios (O.R. – the exponential function of the b coefficient of the individual logistic regression models) were used to estimate the probability of a usage situation to be selected as appropriate given the product familiarity rating. For individual usage situations, the resulting odds ratios can therefore be interpreted as follows (Giacalone et al., 2015):

- O.R. = 1 Familiarity is unrelated to the odds of this situation being selected.
- O.R. > 1 Familiarity is associated with higher odds of this situation being selected.
- O.R. < 1 Familiarity is associated with lower odds of this situation being selected.

All analyses were carried out in the statistical computing environment R (R Development Core Team, 2013).

2.5. Results (Study 1)

ANOVA showed that consumers clearly differentiated between fruit types with regards to product familiarity ($F_{(18,2439)} = 199.3, p < 0.001, \eta^2 = 0.59$), with mean ratings ranging from 1.4 to 4.9 on a 5 point scale. Table 1 presents the citation frequencies for each of the 16 usage situations in correspondence of the 19 fruit names, as well as results from Cochran's Q tests, which revealed significant differences between the fruit names stimuli for all evaluated use situations ($p < 0.001$). The largest differences in appropriateness was for the usage situation "As part of breakfast" ($Q = 343$), for which bananas were considered a highly appropriate choice. Other highly discriminating usage situations were: "As a healthy alternatives to other snacks" ($Q = 284$), for which apples, bananas, grapes, feijoas and kiwifruit showed the highest citation frequencies, and "As part of a dessert" ($Q = 270$), which was highly associated with pineapple and passionfruit. The least discriminating usage situation was "For something a bit more sophisticated" ($Q = 27$), which passionfruit, pawpaw/papaya and raspberries were primarily associated with. Taken together, the information in Table 1 showed that unfamiliar fruit types (cherimoya, dragonfruit, loquat) consistently exhibited the lowest citation frequencies across most of the usage situations, as well as in absolute terms (cf. row total). This is in line with previous research findings that consumers have difficulties envisaging usage situations for fruit types they are unfamiliar with (in that case, Kiwano and Pomello; Jaeger et al., 2005).

Regression analyses fully supported the hypothesized link between familiarity and usage versatility. Negative binomial regression indicated that the degree of product familiarity was predictive of the total number of appropriate usage situations ($b_{\text{Familiarity}} = 0.32, z_{(2458)} = 42.4, p < 0.001$). The maximum likelihood pseudo R^2 of the model was 45%, indicating a larger effect of familiarity than in previous datasets ($6\% < R^2 < 14\%$; Giacalone et al., 2015).

Logistic regression results, shown in Table 2, also pointed toward the expected positive effect of familiarity. For all usage situations but one ("For something a bit more sophisticated"), familiarity significantly increased the odds of appropriateness ($p < 0.001$). The strongest associations were with the usage situations "Something I can't resist" (OR = 3.10), "Before bed" (OR = 2.51) and "For children" (OR = 2.42).

The range in ORs (1.02–3.10) was also larger than previously obtained (0.77–1.94; Giacalone et al., 2015). Tentatively, this could be attributed to the greater heterogeneity in this dataset, where different product categories were evaluated (as opposed to different variations of the same product).

3. Study 2: White wine

3.1. Participants (Study 2)

Participants ($N = 112$, 69% women) were recruited by a marketing research provider and received cash compensation for their time. All lived in Auckland, New Zealand. They were aged between 26 and 56 years old (mean age = 40.7 ± 9.0). Recruitment criteria regarding consumption/liking of white wine were not enforced, but responses to background questions at the end of the study confirmed that all participants drank wine at least once a year. Participants completed the study as part of a central location test (CLT) that investigated consumers' responses to a range of foods and beverages. Participants gave written voluntary informed consent before commencing the study.

3.2. Stimuli (Study 2)

Images of bottles of white wine were used as stimuli (Fig. 1). All wines (750 ml) were commercially available in NZ supermarkets at the time of the study. Different wine styles (table wine, sparkling wine, dessert wine), grape varieties (Sauvignon Blanc, Pinot Gris, Chardonnay, Gewürtztraminer), alcohol content (12–14% and 9–10%), and brands were included to create a continuum of novel-to-familiar stimuli. The wines also spanned a wide range in retail price (price points varied from NZ\$ 9.99 to NZ\$ 25.99), although presented as part of the information given to the participants. The 12 wines were selected from a larger pool of wines through pilot work with staff at Plant & Food Research.

Table 1

Frequency table showing the occurrence of each usage situation for each of the 19 fruit names, ranked by product familiarity (Study 1, $N = 246$). The last two rows report test statistics for Cochran's Q test (CQT). Within columns, frequencies not sharing superscript letters are significantly different ($p \leq 0.05$), following pairwise comparison by Tukey's HSD test (product familiarity) or Cochran's Q test (usage situations).

	Mean familiarity	As a healthy alternative to other snacks	As part of a dessert	As part of breakfast	Before bed	For children	For energy	For something a bit more sophisticated	For use in juices/smoothies	For variety in my fruit consumption	In a green salad	Something I can't resist	Something that is quick and easy	To eat on its own	To indulge myself	To share with others	When riding in a car	Row Total
Apples	4.9 ^a	118 ^a	95 ^{bcd}	80 ^{cde}	30 ^{ab}	113 ^a	81 ^b	9 ⁱ	100 ^{abcd}	100 ^{abc}	70 ^a	27 ^{fgh}	117 ^a	123 ^a	26 ^{cde}	71 ^{cde}	103 ^a	1263
Bananas	4.9 ^a	113 ^{ab}	106 ^{abc}	118 ^a	31 ^{ab}	112 ^a	112 ^a	10 ^j	118 ^a	100 ^{abc}	9 ^g	32 ^{defg}	113 ^a	121 ^a	24 ^{cde}	55 ^{efg}	94 ^a	1268
Oranges	4.9 ^a	107 ^{abc}	77 ^{de}	76 ^{de}	31 ^{ab}	96 ^{abc}	77 ^{bc}	12 ^{hi}	110 ^{ab}	104 ^{abc}	51 ^{bc}	36 ^{cdef}	81 ^{bcd}	111 ^{ab}	26 ^{cde}	76 ^{bcd}	24 ^c	1095
Kiwifruit	4.8 ^{ab}	114 ^{ab}	110 ^{abc}	96 ^{abcd}	26 ^{bc}	93 ^{abc}	75 ^{bc}	20 ^{gh}	106 ^{abcd}	112 ^a	40 ^{cd}	31 ^{efg}	92 ^{bc}	119 ^a	35 ^c	57 ^{def}	16 ^c	1142
Grapes	4.8 ^{ab}	117 ^a	103 ^{abc}	73 ^{ef}	39 ^a	109 ^{ab}	63 ^{bcd}	47 ^{cde}	48 ^{ef}	113 ^a	73 ^a	65 ^a	117 ^a	118 ^a	75 ^{ab}	110 ^a	84 ^a	1354
Peaches	4.8 ^{abc}	109 ^{ab}	115 ^{ab}	107 ^{ab}	23 ^{bcd}	91 ^{bc}	62 ^{cde}	35 ^{ef}	95 ^{bcd}	105 ^{ab}	21 ^{ef}	50 ^{abc}	92 ^{bc}	118 ^a	66 ^{ab}	63 ^{cdef}	38 ^b	1190
Pineapple	4.7 ^{abc}	94 ^{bcd}	122 ^a	79 ^{cde}	18 ^{cd}	93 ^{abc}	54 ^{de}	42 ^{cde}	113 ^{ab}	109 ^a	32 ^{de}	47 ^{bcd}	49 ^{ef}	102 ^{ab}	63 ^{ab}	93 ^{ab}	11 ^d	1121
Feijoas	4.7 ^{abc}	114 ^{ab}	103 ^{abc}	94 ^{bcd}	16 ^d	104 ^{ab}	62 ^{cd}	28 ^{fg}	94 ^{bcd}	108 ^a	15 ^{fg}	58 ^{ab}	99 ^{ab}	123 ^a	58 ^b	68 ^{cde}	19 ^c	1163
Passionfruit	4.5 ^{bc}	86 ^{cde}	122 ^a	77 ^{de}	16 ^{cd}	66 ^d	44 ^{ef}	71 ^a	88 ^{cd}	107 ^a	12 ^{fg}	59 ^{ab}	65 ^{de}	93 ^{bc}	78 ^a	41 ^{gh}	9 ^{de}	1034
Raspberries	4.4 ^{bc}	94 ^{bcd}	121 ^a	98 ^{abc}	14 ^{de}	76 ^{cd}	44 ^{efg}	68 ^{ab}	114 ^{ab}	97 ^{abcd}	13 ^{fg}	46 ^{bcd}	76 ^{cd}	90 ^{bc}	81 ^a	79 ^{bc}	23 ^c	1134
Mangoes	4.4 ^c	99 ^{abc}	110 ^{abc}	91 ^{bcd}	19 ^{bcd}	77 ^{cd}	44 ^{ef}	66 ^{ab}	112 ^{ab}	103 ^{abc}	61 ^{ab}	50 ^{abc}	44 ^f	106 ^{ab}	75 ^{ab}	79 ^{bc}	8 ^{def}	1144
Pawpaw	3.6 ^d	98 ^{abcd}	96 ^{bcd}	88 ^{bcd}	17 ^{cd}	66 ^{de}	46 ^{ef}	68 ^{ab}	86 ^d	107 ^a	43 ^{cd}	21 ^{ghi}	42 ^{fg}	96 ^{bc}	59 ^b	65 ^{cdef}	6 ^{def}	1004
Tamarillo	3.5 ^d	71 ^{ef}	76 ^{de}	57 ^f	4 ^f	37 ^{fg}	29 ^{hi}	52 ^{bcd}	55 ^{ef}	87 ^{bcd}	23 ^{ef}	20 ^{ghi}	40 ^{fg}	81 ^{cd}	33 ^c	25 ^j	6 ^{def}	696
Persimmon	3.1 ^e	68 ^{ef}	60 ^{ef}	40 ^{gh}	13 ^{de}	40 ^{fg}	29 ^{ghi}	53 ^{bc}	41 ^{fg}	87 ^{bcd}	23 ^{ef}	20 ^{ghi}	38 ^{fg}	80 ^{cd}	30 ^{cd}	40 ^{ghi}	9 ^{de}	671
Lychees	2.9 ^e	55 ^{fg}	90 ^{cd}	38 ^h	6 ^{ef}	34 ^{gh}	20 ^{ij}	55 ^{abc}	52 ^{ef}	77 ^{def}	10 ^g	14 ^{ij}	29 ^{gh}	59 ^{ef}	30 ^{cd}	37 ^{hi}	5 ^{def}	611
Gooseberries	2.8 ^e	80 ^{de}	81 ^d	56 ^{fg}	7 ^{ef}	49 ^{ef}	38 ^{fgh}	57 ^{abc}	59 ^e	83 ^{cde}	31 ^{de}	17 ^{hi}	52 ^{ef}	70 ^{de}	35 ^c	51 ^{fg}	20 ^c	786
Loquat	2.0 ^f	44 ^{gh}	42 ^g	22 ⁱ	3 ^f	24 ^{hi}	20 ^{ij}	45 ^{cde}	25 ^h	75 ^{ef}	9 ^g	8 ^{jk}	22 ^{hi}	58 ^{ef}	19 ^{de}	22 ^j	6 ^{def}	444
Dragonfruit	1.8 ^f	39 ^h	44 ^{fg}	32 ^{hi}	2 ^f	19 ^j	25 ^{ij}	46 ^{cde}	28 ^{gh}	64 ^f	13 ^{fg}	7 ^{jk}	12 ^{ij}	51 ^f	33 ^c	27 ^{ij}	2 ^f	444
Cherimoya	1.4 ^g	20 ⁱ	24 ^h	9 ⁱ	4 ^f	3 ^j	16 ^j	36 ^{def}	17 ^h	47 ^g	7 ^g	3 ^k	9 ^j	29 ^g	16 ^e	19 ^j	3 ^{ef}	262
Column Total	–	1640	1697	1331	319	1302	941	820	1461	1785	556	611	1189	1748	862	1078	486	–
Q value	–	284	270	343	162	87	109	27	94	97	94	150	73	104	84	192	71	–
p value	–	***	***	***	***	***	***	**	***	***	***	***	***	***	***	***	***	–

n.s. – non significant.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.



Fig. 1. White wine images used in Study 2. Full sized images are available as upon request.

Table 2

Effect of product familiarity on perceived appropriateness for each usage situation: Odd ratios from logistic regression (Study 1: Fruit names).

Study 1 (Fruit names, N = 246) Usage situation	O.R.
Something I can't resist	3.10***
Before bed	2.51***
For children	2.42***
Something that is quick and easy	2.35***
When riding a car	2.34***
To eat on its own	2.33***
As a healthy alternative to other snacks	2.10***
As part of a dessert	1.93***
As part of breakfast	1.87***
For use in juices/smoothies	1.84***
For energy	1.82***
To share with others	1.75***
For variety in my fruit consumption	1.69***
To indulge myself	1.60***
In a green salad	1.55***
For something a bit more sophisticated	1.02 ^{n.s.}

n.s. – Non significant.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

The full color images of the wine bottles (taken by a professional photographer in a studio) were approximately 23–25 cm tall and 5–7 cm in wide printed size, and were shown on a single sheet of an A4 page next to the item-by-use (IBU) question.

3.3. Experimental procedure and data analysis (Study 2)

Participants evaluated item-by-use (IBU) appropriateness for 16 usage situations, for each of the 12 white wine images. The study involved the following usage situations: “As a gift for a host/hostess”, “For ‘drink and nibbles’ occasions”, “For everyday usage when at home”, “For health conscious people”, “For men”, “For special occasions”, “For the elderly”, “For women”, “To drink in a bar, café or restaurant”, “To drink with an evening meal”, “To drink with cakes/desserts”, “To drink with friends and family”, “To drink with lunch”, “To use as an ingredient in cooking”, “When I want to indulge myself”, and “When I want to relax and unwind”. These usage situations were selected with input from past research on consumption practices for wine among New Zealand and Australian consumers (e.g., Hall et al., 2001; Mueller Loose & Jaeger, 2012), and pilot work with Plant & Food Research staff.

As in Study 1, a CATA question was employed, and the order in which usage situations appeared in the ballot was randomized between participants. The average time to complete the task was ~10 min.

For each wine image participants indicated whether or not they recalled previously seeing that specific bottle (Yes, No) and this response was used as a measure of familiarity. For this reason, Cochran's Q test (instead of ANOVA) was used to assess product differences with regard to familiarity.

Apart from this, the same set of data analyses as in Study 1 was applied to the data.

3.4. Results (Study 2)

Table 3 reports the range in familiarity for each of the 12 white wine images, as well as citation frequencies associated with the 16 usage situations. Cochran's Q confirmed large differences between the stimuli with regards to familiarity (Q value = 493), as well as highly significant differences in IBU appropriateness of the wines for all usage situations ($p < 0.001$). Inspection of Table 3 revealed that the largest difference between the wines was linked to the use “For health-conscious people” (Q value = 364), which had the highest citation frequency for an organic wine (Brancott Pinot Gris) and a reduced alcohol wine which was co-branded with Weight Watchers® (All Hallows' Eve Sauvignon Blanc). Probably using bottle shape as a cue, the Siefried Riesling was more strongly than other wines associated with “To drink with cakes/desserts” (this wine comes in an elegant 750 ml “Futura Bordeaux” bottle which is mostly used for dessert wines). On average, the lowest citation frequencies were associated with “For the elderly,” and this was also the usage that discriminated least between the focal wines (Q value = 27).

As expected, the negative binomial regression established that product familiarity significantly contributed to predicting the number of checked usage situations, although the value of the regression coefficient pointed to a weak/moderate, rather than strong, association ($b = 0.21$, $z_{(1343)} = 5.7$, $p < 0.001$; Pseudo $R^2 = 3\%$). The positive relationship between familiarity and perceived suitability for multiple uses was further confirmed by the logistic regression, where a majority of uses (10 of 16) had ORs significantly greater than one (Table 4). Relative to the usage situations for which the odds ratios were statistically equal to one, these situations were more likely to be considered as suitable for use when the focal wines were familiar (vs. unfamiliar). The strongest observed associations with familiarity were for the usages “As a gift for a host/hostess”, “When I want to indulge myself”, and “For ‘drinks and nibbles’ occasions”, for which a familiar wine was more than twice as likely to be deemed appropriate ($OR > 2$). The only instance where a familiar wine was significantly less, rather than more likely to be considered suitable for a given usage was “For health conscious people” ($OR = 0.67$). This particular result is related to the highest citation frequency of the organic Brancott Pinot Gris, closely followed by the co-branded Weight Watchers® wine, indicating that specific product characteristics (organic, low alcohol content) may strongly serve to increase appropriateness for unfamiliar products, even for a usage situation that is not particularly associated with that product category.

Taken together, the results from Study 2 supported the hypothesis regarding the positive influence of familiarity on appropriateness of use, in particular the suggested link between familiarity and versatility uncovered in the earlier research with beer (Giacalone et al., 2015). Regarding the magnitude of the effect of familiarity on perceived appropriateness for product use, the odds ratios in Study 2 (O.R. range: 0.67–2.28) were slightly smaller than in Study 1, and appeared of a similar magnitude to the beer studies reported by Giacalone et al. (2015) (O.R. range: 0.78–1.94), suggesting similarity in effect size.

4. Study 3: Chocolate

The focal product category for Study 3 was chocolate. The purpose of this study was to extend previous results to another product category, while controlling for variation in brand, one of the extrinsic product factors known to affect appropriateness evaluations (Cardello & Schutz, 1994).

4.1. Participants (Study 3)

Adult New Zealand consumers ($N = 192$, 54.1% women) took part in Study 3. They were aged 21–62 years old (mean age = 40.1 ± 10.2). Participants were recruited by a marketing research provider and received cash compensation for their time. They completed the study as part of a central location test (CLT) that investigated consumers' responses to a range of foods and beverages. Written voluntary informed consent was obtained before commencing the study.

Table 3

Frequency table showing the occurrence of each usage situation for each of the 12 white wines, ranked by product familiarity (Study 2, $N = 112$). The last two rows report test statistics for Cochran's Q test (CQT). Within columns, frequencies not sharing superscript letters are significantly different ($p \leq 0.05$).

	% of respondents recognizing the wine	As a gift for a host/ hostess	For 'drinks and nibbles' occasions	For every day usage when at home	For health-conscious people	For men	For special occasions	For the elderly	For women	To drink in a bar, café or restaurant	To drink with an evening meal	To drink with cakes/ desserts	To drink with friends and family	To drink with lunch	To use as an ingredient in cooking	When I want to indulge myself	When I want to relax and unwind	Row Total
Lindauer Sauv. Blanc	82.1 ^a	80 ^a	79 ^a	30 ^{cd}	6 ^e	39 ^{bcd}	89 ^a	21 ^{bc}	70 ^a	66 ^b	49 ^{de}	28 ^{bc}	78 ^{ab}	40 ^d	6 ^d	53 ^a	53 ^{ab}	724
Villa Maria 2012 Pinot Gris	55.4 ^b	67 ^b	70 ^{ab}	35 ^c	7 ^{ef}	46 ^{ab}	55 ^{bc}	19 ^c	60 ^{bc}	78 ^a	82 ^a	16 ^{de}	79 ^{ab}	56 ^{abc}	16 ^{cd}	48 ^{ab}	57 ^a	795
Brancott 2012 Marl. Sauv. Blanc	48.2 ^b	63 ^{bc}	72 ^{ab}	47 ^{ab}	9 ^{de}	45 ^{ab}	39 ^{de}	21 ^{bc}	52 ^{cd}	80 ^a	79 ^{ab}	17 ^{de}	81 ^a	64 ^{ab}	27 ^b	36 ^{cd}	63 ^a	730
Selaks Sparkling Sauvignon Blanc	18.8 ^c	53 ^{cd}	76 ^a	29 ^{de}	34 ^c	39 ^{bcd}	59 ^b	29 ^{ab}	60 ^{bc}	61 ^{bc}	51 ^d	25 ^{cd}	77 ^{ab}	57 ^{abc}	9 ^d	38 ^{bc}	41 ^{cd}	741
Brancott Flight 2012 Sauv. Blanc	12.5 ^{cd}	46 ^{de}	63 ^b	42 ^{bc}	46 ^b	33 ^d	42 ^{de}	32 ^a	68 ^{ab}	64 ^{bc}	62 ^{cd}	24 ^{cd}	68 ^{bc}	67 ^a	25 ^{bc}	19 ^e	41 ^{cd}	584
Brancott 2012 Pinot Gris	10.7 ^{de}	60 ^{bc}	61 ^b	35 ^c	63 ^a	42 ^b	46 ^{cd}	23 ^{bc}	50 ^{cd}	62 ^b	67 ^{bc}	19 ^{cde}	79 ^a	61 ^{ab}	25 ^{bc}	40 ^{bc}	57 ^a	745
All Hallow's Eve 2011 Sauv. Blanc	8.9 ^{def}	40 ^e	62 ^b	39 ^{bc}	61 ^a	30 ^d	33 ^e	24 ^{ab}	76 ^a	47 ^{de}	67 ^{bc}	20 ^{cde}	61 ^c	61 ^{ab}	21 ^{bc}	24 ^e	52 ^{ab}	562
Clearskin 2012 Pinot Gris	8.9 ^{def}	24 ^f	44 ^{cd}	57 ^a	2 ^f	37 ^c	22 ^f	14 ^c	38 ^e	41 ^e	59 ^{cd}	12 ^e	48 ^d	38 ^d	49 ^a	25 ^e	43 ^{bc}	798
Aronui 2011 Chardonnay	7.1 ^{def}	62 ^{bc}	73 ^{ab}	42 ^{bc}	6 ^{ef}	49 ^{ab}	39 ^{de}	20 ^c	53 ^{cd}	63 ^{bc}	74 ^{ab}	11 ^e	77 ^{ab}	56 ^{abc}	24 ^{bc}	33 ^{cd}	54 ^{ab}	630
Matawhero 2011 Gewurztraminer	7.1 ^{def}	53 ^{cd}	52 ^c	20 ^e	7 ^{ef}	43 ^{abc}	42 ^d	19 ^c	45 ^{de}	55 ^{cd}	67 ^{bc}	38 ^b	64 ^c	46 ^{cd}	10 ^d	27 ^{de}	35 ^{cd}	799
Seifried 2011 Riesling	5.4 ^{ef}	64 ^{bc}	34 ^d	10 ^f	5 ^{ef}	32 ^d	62 ^b	22 ^{bc}	46 ^{de}	39 ^e	41 ^e	67 ^a	49 ^d	19 ^e	21 ^{bc}	36 ^{cd}	31 ^d	752
The Doctors' 2011 Sauv. Blanc	3.6 ^f	47 ^{de}	71 ^{ab}	41 ^{bc}	16 ^d	51 ^a	41 ^{de}	29 ^a	54 ^{cd}	63 ^{bc}	67 ^{bc}	12 ^e	70 ^{abc}	55 ^{bc}	23 ^{bc}	27 ^{de}	57 ^a	795
Column total	–	665	763	428	262	492	572	274	676	32	722	771	290	834	622	256	408	–
Q value	493	119	104	96	364	39	157	27	94	94	85	186	78	124	106	71	58	–
p value	***	***	***	***	***	***	***	**	***	***	***	***	***	***	***	***	***	–

n.s. – Non significant.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

Table 4

Effect of product familiarity on perceived appropriateness for each usage situation: Odd ratios from logistic regression (Study 2: White wine).

Study 2 (White wine, N = 112) Usage situation	O.R.
As a gift for a host/hostess	2.28***
When I want to indulge myself	2.13***
For 'drinks and nibbles' occasions	2.09***
When I want to relax and unwind	1.90***
For special occasions	1.89***
To drink with friends and family	1.82***
For women	1.61***
To drink in bar, café, or restaurant	1.53**
For everyday usage at home	1.40*
To drink with an evening meal	1.34*
To drink with lunch	1.22 ^{n.s.}
For the elderly	1.21 ^{n.s.}
For men	1.21 ^{n.s.}
To drink with cakes and desserts	1.16 ^{n.s.}
To use as an ingredient in cooking	0.91 ^{n.s.}
For health conscious people	0.67*

n.s. – Non significant.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

4.2. Stimuli (Study 3)

Images of chocolate were used as product stimuli (Fig. 2). All chocolates were commercially available in NZ supermarkets and were of a single, heavily promoted national brand (Cadbury). All variants retailed at about the same price (~NZ\$4 for a 250 g block of chocolate). The chocolate variants were either milk, dark or white chocolate, with or without added ingredients (e.g., nut, coconut, raisin), and with or without filled center (e.g., caramel, peppermint). Some of the variants had only recently become available in NZ shops (<6 months), whereas others had been available for a decade or more (e.g., Dairy Milk®, Old Gold® and Dream®). The full color images (taken by a professional photographer in a studio) were 6 cm × 12 cm in printed size and were shown on a single sheet of an A4 page next to the item-by-use (IBU) question.

4.3. Experimental procedure and data analysis (Study 3)

Participants elicited item-by-use (IBU) appropriateness responses for 15 usage situations for each of the 13 chocolate images. The ballot included the following usage situations: “After dinner”, “As a pick-me up”, “For any occasion”, “For baking/cooking”, “For children”, “For morning tea”, “For something a bit different”, “To cheer someone up”, “To indulge yourself”, “To share with family/friends”, “When craving chocolate”, “When feeling blue”, “When feeling stressed”, “When walking/hiking”, and “When watching TV”. These usage situations were selected based on past literature (e.g., Zarantonello & Luomala, 2011) and pilot work with Plant & Food Research staff. Their presentation order in the ballot was randomized between subjects. The average time to complete the survey was ~10 min. Familiarity was rated for each of the chocolate images using the scale from Study 1.

The same set of data analyses as in Study 1 was conducted.

4.4. Results (Study 3)

A significant main effect of type of chocolate on product familiarity was found ($F_{(12,2333)} = 92.7$, $p < 0.001$, $\eta^2 = 0.32$), with ratings ranging from 2.2 (Raspberry Chocolate Mousse) to 4.7 (Dairy Milk) on 5 point scale (Table 5).

Table 5 presents the citation frequencies for each of the 15 usage situations for each of the 13 chocolate images, and also shows the results from Cochran's Q tests, which revealed significant differences between the chocolates for all evaluated usage situations ($p < 0.001$). As also observed in the previous two studies, some use situations discriminated more among the chocolates than did others (e.g., “When feeling blue”, $Q = 266$ vs. “For something a bit different”, $Q = 27$). Dairy Milk chocolate had the highest average familiarity rating and for each of the situations its citation frequencies were always the highest or next highest relative to the other chocolates.

Corroborating the results from Study 1 and 2, negative binomial regression revealed that product familiarity was positively related to the total number of selected use situations ($b = 0.11$, $Z_{(2346)} = 15.04$, $p < 0.001$; Pseudo $R^2 = 8\%$). The lower value of the regression coefficient relative to Study 2 (0.11 vs. 0.21) had face validity considering the constrained product range, which only included a single brand of chocolate with very similar price points. The results from logistic regression



Fig. 2. Chocolate images used in Study 3. Full sized images are available as upon request.

(Table 6) showed that for all evaluated usage situations, product familiarity increased perceived appropriateness; all odds ratios were significantly greater than 1 ($p < 0.001$). The strongest association (i.e., highest odds ratios) was with the uses “When feeling blue,” “To indulge yourself”, and “When feeling stressed”, suggesting that when chocolate is eaten to relieve stress, or more generally when it is eaten as a comfort food, familiar products are the more likely choice.

At a first glance, it seemed somewhat counterintuitive to establish a positive relationship between familiarity and the use situation “When I want something a bit different” (O.R. = 1.10; $p < 0.001$). A possible explanation is that consumers, when they want something that is not the chocolate/s they normally eat (i.e., something that is a bit different), select from other known flavors. In other words, they may select from other flavors of chocolate that they are familiar with, but eat less frequently.

The positive relationship between familiarity and perceived appropriateness of use corroborated the results of the previous two studies. The odds ratios again spanned a similar range (1.10–1.46), although the values appeared to be more truncated (viz. O.R. range 1.02–3.10 for Study 1 and 0.67–2.28 for Study 2). Tentatively, this was due to the removal of brand differences from the stimuli set.

5. Study 4: Kiwifruit

5.1. Participants (Study 4)

Adult New Zealand adults participants ($N = 302$, 57% women) completed the questionnaire online from a private location. All participants were members of an established online panel and completed the questionnaire as part of a larger study (Piqueras-Fiszman & Jaeger, 2014). Their ages ranged from 20 to 65 years old (20–35 y.o. = 28.1%; 36–50 y.o. = 60.6% and 51–65 y.o. = 11.3%). All were consumers of kiwifruit, either very frequently (2–3 times per week, when in season; $N = 157$) or less frequently (1–2 times per month or less, when in season; $N = 145$). Participants received compensation for their time. Written voluntary informed consent was obtained before commencing the study.

Table 5

Frequency table showing the occurrence of each usage situation for each of the 13 chocolates, ranked by product familiarity (Study 3, $N = 192$). The last two rows report test statistics for Cochran's Q test (CQT). Within columns, frequencies not sharing superscript letters are significantly different ($p \leq 0.05$), following pairwise comparison by Tukey's HSD test (product familiarity) or Cochran's Q test (usage situations).

	Mean familiarity	To indulge yourself	When feeling stressed	To cheer someone up	When feeling blue	As a pick-me-up	When craving chocolate	For any occasion	For something a bit different	To share with family/friends	When watching TV	After dinner	For baking/cooking	When walking/hiking	For children	For morning tea	Row Total
Dairy Milk	4.7 ^a	157 ^a	130 ^a	105 ^a	100 ^a	116 ^a	109 ^{ab}	126 ^a	67 ^{abc}	97 ^a	107 ^a	125 ^a	100 ^a	90 ^a	96 ^a	106 ^a	1631
Caramello	4.5 ^{ab}	132 ^b	121 ^{ab}	101 ^{ab}	50 ^c	102 ^{ab}	99 ^{bcd}	101 ^b	66 ^{abc}	86 ^{ab}	93 ^{bcd}	121 ^{ab}	76 ^b	59 ^{bc}	70 ^{cde}	100 ^{ab}	1377
Fruit & Nut	4.3 ^{ab}	109 ^c	109 ^b	82 ^{cd}	69 ^b	82 ^{cd}	92 ^{cde}	110 ^b	65 ^{abc}	92 ^a	79 ^{def}	101 ^{bc}	66 ^{bcd}	59 ^{bc}	60 ^{ef}	89 ^{bc}	1264
Crunchie	4.3 ^b	135 ^b	110 ^b	90 ^{bc}	55 ^c	82 ^{cd}	122 ^a	82 ^{cd}	64 ^{abc}	76 ^{bc}	105 ^{ab}	110 ^b	68 ^{bc}	56 ^{bc}	82 ^{abc}	105 ^a	1342
Dream	4.2 ^b	114 ^c	93 ^c	73 ^d	54 ^c	90 ^{bc}	94 ^{bcd}	80 ^{cd}	67 ^{abc}	76 ^{bc}	91 ^{bcd}	89 ^{cde}	75 ^{bc}	64 ^b	86 ^{ab}	85 ^c	1231
Energy	3.6 ^c	51 ^f	76 ^{de}	39 ^e	91 ^a	63 ^e	53 ^g	82 ^{cd}	46 ^d	56 ^{de}	32 ^h	52 ^g	66 ^{bcd}	66 ^b	43 ^g	28 ^e	844
Mint Bubbly	3.3 ^{cd}	88 ^d	65 ^e	69 ^d	25 ^e	73 ^{de}	96 ^{bcd}	60 ^{de}	58 ^{cd}	58 ^{de}	80 ^{def}	73 ^f	52 ^{de}	29 ^f	69 ^{cde}	68 ^d	963
Coconut Rough	2.9 ^{de}	103 ^{cd}	94 ^c	73 ^d	43 ^{cd}	77 ^{cd}	108 ^{ab}	86 ^c	76 ^a	85 ^{ab}	92 ^{bcd}	94 ^{cd}	60 ^{cde}	50 ^{bcd}	70 ^{cde}	81 ^{cd}	1192
Old Gold Peppermint	2.9 ^{de}	58 ^{ef}	72 ^e	71 ^d	28 ^e	68 ^{de}	72 ^f	57 ^e	53 ^{cd}	47 ^e	51 ^g	77 ^{ef}	58 ^{cde}	38 ^{ef}	52 ^{fg}	77 ^{cd}	879
Dark Bubbly	2.7 ^{ef}	103 ^c	87 ^{cd}	81 ^{cd}	48 ^c	73 ^{de}	107 ^{ab}	75 ^{cd}	64 ^{abc}	63 ^{cd}	87 ^{cde}	90 ^{cde}	64 ^{bcd}	53 ^{bcd}	66 ^{def}	77 ^{cd}	1138
Old Jamaica Rum'N' Raisin	2.4 ^{fg}	65 ^e	73 ^{de}	74 ^d	32 ^{de}	74 ^{cde}	84 ^{ef}	70 ^{de}	62 ^{bc}	63 ^{cd}	65 ^{fg}	79 ^{def}	60 ^{cde}	60 ^{bc}	58 ^{ef}	75 ^{cd}	994
Snack	2.3 ^{fg}	103 ^c	77 ^{de}	72 ^d	30 ^e	63 ^e	106 ^{bc}	72 ^{cd}	61 ^{bcd}	70 ^{cd}	103 ^{abc}	79 ^{def}	49 ^e	40 ^{def}	77 ^{bcd}	87 ^{bc}	1089
Raspberry chocolate mousse	2.2 ^g	69 ^e	75 ^{de}	82 ^{cd}	20 ^e	77 ^{cde}	88 ^{de}	70 ^{de}	72 ^{ab}	71 ^{cd}	73 ^{ef}	91 ^{cde}	61 ^{cde}	47 ^{cde}	63 ^{def}	107 ^a	1066
Column total	–	1287	1182	1012	645	1040	1230	1071	821	940	1058	1181	855	711	892	1085	–
Q value	–	58	170	111	266	87	109	148	27	97	170	150	73	104	84	192	–
p value	–	***	***	***	***	***	***	***	**	***	***	***	***	***	***	***	–

n.s. – Non significant.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

Table 6

Effect of product familiarity on perceived appropriateness for each usage situation: Odd ratios from logistic regression (Study 3: Chocolate).

Study 3 (Chocolate bars, N = 192) Usage situation	O.R.
When feeling blue	1.46***
To indulge yourself	1.41***
When feeling stressed	1.30***
After dinner	1.28***
When walking/hiking	1.26***
For any occasion	1.25***
For baking/cooking	1.25***
To share with family and friends	1.24***
To cheer someone up	1.22***
As a 'pick-me-up'	1.20***
When watching TV	1.18***
When craving chocolate	1.17***
For morning tea	1.17***
For children	1.10***
For something a bit different	1.10***

n.s. – Non significant.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

5.2. Stimuli (Study 4)

Images of kiwifruit were used as product stimuli. Rather than using images of real fruit, visuals created by a professional graphical artist were used. This provided freedom to also investigate types of kiwifruit not yet commercially available. As seen in Fig. 3, the images showed half of a kiwifruit (cut equatorially) making flesh and skin equally visible. On screen, the images were 5 cm × 5 cm and the kiwifruit were positioned in the center of this square and shown on a gray background.

To create the images, three factors were varied, at four levels each: skin type/color, flesh color and flesh structure. The factors and levels were determined in consultation with kiwifruit breeders from Plant & Food Research to have biological potential. Additionally, the factors used to vary the degree of novelty were known to consumers in the sense that they represented types of variation within other commercially available fruits and vegetables. Because in-depth examination of the relative importance of the factors that defined the kiwifruit stimuli were beyond the scope of this research, a balanced subset of 12 images were selected using a Greco-Latin square experimental design. Pilot work to confirm that the images represented a continuum of novel-familiar kiwifruit was conducted with Plant & Food Research staff.

5.3. Experimental procedure and data analysis (Study 4)

The procedure for data collection was identical to the previous studies. Participants elicited item-by-use (IBU) appropriateness responses for 15 usage situations, for each of the 12 kiwifruit images. The study involved the following usage situations: “After dinner”, “As a digestive aid”, “As a substitute for other types of fresh fruit”, “For children”, “For morning tea”, “For use in fruit salad”, “In a lunch box”, “To share with family and friends”, “When I feel like something refreshing”, “When I feel like something sweet”, “When I want something new and different”, “When needing energy”, “When watching TV”, “With a glass of champagne”, and “With breakfast”. These usage situations were selected with input from past research (Jaeger, 2000, 2003; Bava, Jaeger, & Dawson, 2009; Jaeger & Harker, 2005).

Familiarity was rated for each of the 12 kiwifruit images, using the scale from Study 1 and Study 3. The average time to complete the part of the survey related to Study 3 was ~10 min.

The same set of data analyses as in Study 1 was conducted.

5.4. Results (Study 4)

Consumers strongly discriminated between kiwifruit images with regards to familiarity ($F_{(11,3612)} = 193.25$, $p < 0.001$, $\eta^2 = 0.37$). The range in familiarity ratings was 1.2–3.7 (out of 5), with green and yellow fleshed kiwifruits perceived as more familiar, while the pink and red fleshed were perceived as more novel (Table 5).

Table 7 presents the citation frequencies for each of the 16 usage situations for each of the 12 kiwifruit images and also shows the results from Cochran's Q tests, which revealed significant differences between the kiwifruit stimuli for all evaluated usages situations ($p < 0.001$). The usage that discriminated most between the kiwifruit stimuli ($Q = 330$) was “When I

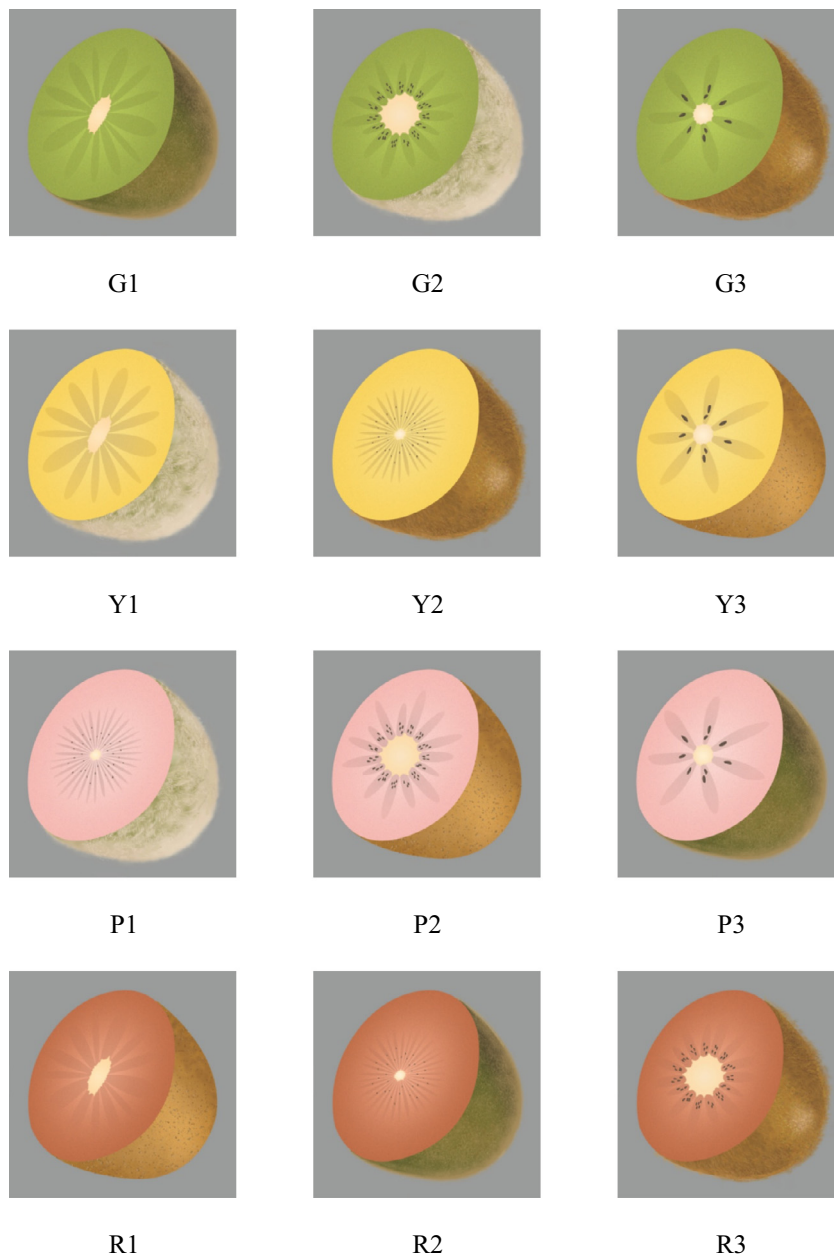


Fig. 3. Kiwifruit images used in Study 4. Full sized images are available as upon request.

want something new and different” with high citation frequencies for pink-fleshed and red-fleshed kiwifruit. This fitted expectations since these kiwifruit are not commercially available, as reflected, accordingly, in the low familiarity ratings for these stimuli (<2.5 out of 5). The least discriminating usage was “To share with family/friends ($Q = 58$), which together with “When watching TV” ($Q = 73$), was associated with low citation frequencies for all stimuli, possibly indicating that NZ consumers perceive kiwifruit as a unit of fruit eaten by one person not several people.

Regression analyses showed results in line with the previous three studies. Negative binomial regression revealed that product familiarity significantly predicted the total number of appropriate usages ($b = 0.10$, $z_{(3623)} = 9.6$, $p < 0.001$; Pseudo $R^2 = 2.4\%$). Logistic regression results confirmed that familiarity increases the odds of perceived appropriateness for all usage situations except “With a glass of champagne” and “When I want something new and different” (Table 8). The range of odds ratios (0.76–1.29) was similar to Study 2 and Study 3, although possibly less extended into the positive values (1.29 vs. 2.28 and 1.46). Tentatively, this can be attributed by the further removal of extrinsic factors (e.g., brand, price) and the hypothetical nature of the stimuli.

6. General discussion

This research has investigated the influence of product familiarity in explaining consumers' evaluations of appropriateness of use.

Our theoretical starting point was that product familiarity is a significant factor in shaping appropriateness evaluations (Giacalone et al., 2015; Jaeger et al., 2005; Tuorila et al., 1994). According to the familiarity heuristics, existing usage patterns formed, for example, by using a product over time, are predictive of later decisions (e.g., Albarracín & Wyer, 2000; Taylor, 1975).

Consistent with these expectations, the results from the four studies reported here confirm that consumers find familiar products appropriate for a wider range of uses. The observed positive link between product familiarity and usage versatility – operationalized as the total number of usage situations perceived as appropriate for a given product – confirm that consumers use past behavior to infer appropriate usages for foods and beverages. The converging evidence obtained here mirrors previous evidence obtained in a series of studies on beer (Giacalone et al., 2015), indicating that the effect is generalizable across multiple categories.

Insofar as appropriateness is a predictor of choice, the familiarity heuristics will lead to a general preference toward familiar foods and beverages. It is therefore likely that consumers' existing habits can be partly explained in terms of the familiarity heuristics, because habits are essentially a preference for the familiar (Cramer & Antonides, 2011; Kahneman, 2003; Samuelson & Zeckhauser, 1988).

Taking a broader perspective, these results indicate that existing food habits may result in a preference for the “status quo type” of food choices (Samuelson & Zeckhauser, 1988), resulting in food-related usage patterns that are resistant to change. The mechanisms by which consumers do not perceive as many appropriate usages for unfamiliar products are probably manifold, and relate to several well-known obstacles to consumer adoption of innovative products (see Kleijnen, Lee, & Wetzels, 2009, for a review). Some have explained this reluctance by arguing that familiarity breeds comfort (Oreg, 2003; Ouellette & Wood, 1998), thus making existing usage patterns and routines more desirable. Additionally, because of the difficulty of evaluating unfamiliar foods, consumers might worry that an unfamiliar product item might not live up to expectations (e.g., will not have desired sensory characteristics) and be a potential waste of money. The inherent complexity and the cognitive effort associated with evaluating unfamiliar products or product features may itself be a source of negative bias against new products.

Since this research is concerned with food and beverage evaluations, the observed low appropriateness of unfamiliar products could also be related to the perceived risk associated with usage and consumption of unfamiliar products. For instance, the uncertainty of achieving food safety could induce consumers to think that familiar products are healthier and safer (Yeung & Morris, 2001). Additionally, the potential social embarrassment coming from poor food choice (e.g., serving a product that is contaminated, or simply does not taste as expected) might also lead consumers to rate unfamiliar products as generally less appropriate.

An important aspect to consider in this line of research is the magnitude of the familiarity effect on appropriateness evaluations relative to other factors. Although the present research was not explicitly designed to answer that question, looking at the effect sizes from regression analyses points to a moderate, rather than strong, importance. Consider as an example the logistic regression results (Tables 2, 4, 6 and 8). The study with the largest range in OR was Study 1 (Fruit names: 2.08) – the only study comparing different products – followed by Study 2 (White wine: 1.61) – which compared products from different brands. Next was Study 4 (Kiwifruit: 0.53) – where unbranded product concepts – and finally Study 3 (Chocolate: 0.36), which included products from a single brand at similar price points. The magnitude of the observed effects decreased in correspondence with the progressive removal of heterogeneity in the stimuli set, indicating that familiarity cannot be disentangled from extrinsic product elements in determining consumers' perception of product appropriateness.

Accordingly, all studies presented suggested that products may have localized appropriateness for specific uses regardless of where they stand in the familiarity continuum. For example, in Study 2, the Riesling wine, one of the least familiar products (recognized by 5% of consumers only) was evaluated as the most appropriate for consumption with cakes and desserts, most likely because of the tall slender bottle typically associated with sweet wines, late harvests, etc. In Study 3, the least familiar chocolate bar (Raspberry Mousse) was highly associated with the usage situation “For morning tea”, for which it received the highest citation frequency. This association is ostensibly due to the light colored packaging (mostly white) with images of fresh fruit, making this a chocolate seeming well suited for morning tea. These examples indicate the importance of product appearance for inferring appropriateness of use and, therefore, the possibility to structure product-context association through packaging design. Study 3 in particular suggests that brand familiarity might increase product appropriateness, in line with previous research on the topic (Hoyer & Brown, 1990; Ratneshwar & Shocker, 1991). It is relevant to stress this aspect because in the food and beverages domain (as well as FMCG generally) many new products are actually line extensions and may therefore be perceived as less familiar, but not highly unfamiliar.

It is also probable that many other factors intervene in shaping consumers' associations between products and usage situations. From an applied perspective, the lesson to be taken is that the less familiar a product is, the more difficult will be for a consumer to evaluate it based on experience, and therefore the higher importance will extrinsic product cues have on consumer evaluations, including evaluations regarding possible product usages. In product development, experimental settings can be used to explore how the layout of packaging design elements, as well as other extrinsic factors (brand, price, country

Table 7

Frequency table showing the occurrence of each usage situation for each of the 12 kiwifruits, ranked by product familiarity (Study 4, $N = 302$). The last two rows report test statistics for Cochran's Q test (CQT). Within columns, frequencies not sharing superscript letters are significantly different ($p \leq 0.05$), following pairwise comparison by Tukey's HSD test (product familiarity) or Cochran's Q test (usage situations).

	Mean familiarity	To share with family/friends	When watching TV	After dinner	For use in fruit salad	When needing energy	For morning tea	In a lunch box	For children	As a substitute for other types of fresh fruit	With breakfast	As a digestive aid	When I want something new and different	When I feel like something sweet	When I feel like something refreshing	With a glass of champagne	Row Total
G3	3.7 ^a	76 ^a	60 ^a	108 ^a	212 ^a	88 ^a	119 ^a	164 ^a	130 ^a	131 ^a	162 ^a	114 ^a	78 ^d	95 ^{bcd}	155 ^a	14 ^c	1706
G1	3.2 ^b	69 ^{ab}	60 ^a	102 ^a	197 ^{ab}	84 ^a	108 ^{ab}	154 ^{ab}	123 ^a	127 ^{ab}	150 ^{ab}	107 ^{ab}	60 ^e	98 ^{bc}	145 ^{ab}	17 ^c	1601
Y3	2.8 ^c	68 ^{ab}	58 ^a	100 ^a	186 ^{bc}	77 ^{ab}	104 ^b	151 ^{ab}	123 ^a	121 ^{ab}	139 ^b	86 ^{cd}	108 ^c	116 ^a	143 ^{ab}	20 ^c	1600
Y2	2.7 ^c	76 ^a	53 ^{ab}	106 ^a	182 ^{bc}	68 ^{bc}	102 ^b	147 ^{bc}	115 ^{ab}	122 ^{ab}	145 ^b	76 ^{de}	101 ^c	109 ^{ab}	133 ^b	21 ^c	1556
G2	2.6 ^c	60 ^{bc}	44 ^{bc}	81 ^b	174 ^c	61 ^{cd}	102 ^b	133 ^{cd}	98 ^{cd}	116 ^{ab}	135 ^{bc}	96 ^{bc}	84 ^d	80 ^{def}	140 ^{ab}	16 ^c	1420
Y1	1.7 ^d	62 ^{ab}	41 ^c	76 ^{bc}	159 ^{cd}	51 ^{def}	75 ^c	122 ^d	102 ^{bc}	113 ^b	120 ^c	66 ^{ef}	132 ^b	85 ^{cde}	103 ^c	24 ^c	1331
R2	1.3 ^e	52 ^c	39 ^{cd}	68 ^{bcd}	152 ^{de}	48 ^{def}	65 ^{cd}	103 ^e	75 ^f	87 ^c	100 ^d	58 ^{fg}	156 ^a	60 ^g	89 ^{cde}	46 ^{ab}	1198
R1	1.3 ^e	49 ^c	43 ^{bc}	66 ^{cd}	158 ^{cd}	53 ^{de}	66 ^{cd}	91 ^{efg}	80 ^{ef}	90 ^c	96 ^d	55 ^{fg}	150 ^a	66 ^{fg}	91 ^{cde}	46 ^{ab}	1200
P3	1.3 ^e	50 ^c	39 ^{cd}	70 ^{bcd}	150 ^{de}	45 ^{efg}	57 ^d	95 ^{ef}	91 ^{cde}	86 ^c	92 ^d	51 ^g	155 ^a	76 ^{ef}	94 ^{cd}	58 ^a	1209
R3	1.3 ^e	46 ^c	30 ^d	75 ^{bcd}	153 ^{de}	39 ^{fg}	69 ^{cd}	98 ^{ef}	77 ^{ef}	93 ^c	93 ^d	55 ^{fg}	153 ^a	68 ^{fg}	88 ^{cde}	41 ^b	1178
P2	1.2 ^e	49 ^c	35 ^{cd}	70 ^{bcd}	158 ^{cd}	34 ^g	63 ^{cd}	85 ^{fg}	90 ^{cde}	83 ^c	94 ^d	45 ^g	154 ^a	71 ^{efg}	86 ^{de}	57 ^a	1174
P1	1.2 ^e	54 ^{bc}	34 ^{cd}	62 ^d	140 ^e	43 ^{efg}	58 ^d	82 ^g	84 ^{def}	83 ^c	78 ^e	51 ^g	157 ^a	72 ^{efg}	77 ^e	57 ^a	1132
Column Total	–	711	536	984	2021	691	988	1425	1188	1252	1404	860	1488	996	1344	417	–
Q value	–	58	73	111	130	146	212	290	122	115	243	222	330	104	234	160	–
p value	–	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	–

n.s. – non significant.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

Table 8

Effect of product familiarity on perceived appropriateness for each usage situation: Odd ratios from logistic regression (Study 4: Kiwifruit).

Study 4 (Kiwifruit, N = 302) Usage situation	O.R.
When I feel like something refreshing	1.29***
With breakfast	1.26***
In a lunch box	1.268***
For morning tea	1.24***
As a digestive aid	1.24***
After dinner	1.21***
When I feel like something sweet	1.21***
For use in fruit salad	1.19***
When watching TV	1.18***
For children	1.18***
When needing energy	1.15***
To share with family and friends	1.13***
As a substitute for other types of fresh fruit	1.12***
With a glass of champagne	0.82***
When I want something new and different	0.76***

n.s. – non significant.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

of origin, advertising claim, etc.) affect appropriateness evaluations, to estimate optimal combinations in relation to intended product usage. In [Giacalone et al. \(2015\)](#) it was suggested that familiar products are mostly evaluated on the basis of past experience and existing habits, making conscious decision processes less likely to occur. Conversely, a stimulus-driven approach is more prominent for evaluations of unfamiliar products, when a consumer cannot draw from memory a set of “known” appropriate usages ([Warlop & Ratneshwar, 1993](#)). This is in line with [Bearden and Schimp \(1982\)](#) who argued that extrinsic product cues are particularly important for consumer assessment of new products.

Finally, product marketers should consider also other ways by which such bias toward novel products can be overridden. In a retail setting, for example, contextual clues can be effectively employed to suggest product usage ([Desai & Ratneshwar, 2003](#)). For instance, unfamiliar products may be placed in a goal-based display (i.e., organized around intended uses or benefits), which may be a good strategy to improve appropriateness in a usage situation not currently associated with that product (e.g., reduced alcohol wine in the health food section). Free trials of novel food items may serve to enhance perceived appropriateness, especially if the low appropriateness is rooted in risk aversion. In addition, choice environments could be adapted, where relevant. For example, placing a novel product close to the counter, or make a novel food as the standard meal choice at e.g. canteens, cafeteria counters, might serve so as to make novel products appear a more appropriate choice.

6.1. Limitations and future research

This research is not without limitations. Firstly, although we hypothesized that product familiarity is a driver of versatility on the basis of the familiarity heuristic, the direction of causality cannot be conclusively inferred from this research. It is also possible that versatility is a driver of product familiarity. For example, a product (or brand) might be positioned in the market by communicating its suitability for a variety of usages (versatility): this may facilitate its recall by the consumers and, in turn, enhance its perceived familiarity. Although the present work shows a consistent positive association between product familiarity and versatility, future research is needed to elucidate directional effects by actually manipulating product familiarity and versatility. Experimentally, product versatility might be manipulated by providing information (say, by a chef or a retailer) on how different food and beverages might be used, whereas product familiarity might be manipulated by discussing how a new product is similar to existing ones. Another approach could be to exploit consumer generated content on the internet ([Olsen & Christensen, 2015](#); [Vidal, Ares, Machin, & Jaeger, 2015](#)). For example, one could “mine” online consumer descriptions of specific products from social media or online communities and to relate them to some proxy for product familiarity (e.g., number of Facebook likes or the popularity of a Twitter hashtag for a particular product or brand), to investigate whether the latter is related to perceived product versatility and/or to some other factors.

Secondly, it should be noted that all studies did not use actual food and beverages but pictorial representations (and product names, in one study). Even though this format has been employed extensively in similar extant research ([Creusen & Schoormans, 2005](#); [Jaeger, Hedderley, & MacFie, 2001, 2005](#); [Raats & Shepherd, 1992](#)), an investigation using real stimuli would be advisable to validate the findings. Moreover, although visual inspection is the primary way to infer usage appropriateness of products, the influence of other sensory modalities should be considered. For instance, hedonic responses and sensory characteristics have been shown to influence evaluations of appropriateness elicited upon actual product tasting ([Gains & Thomson, 1990](#); [Lähteenmäki & Tuorila, 1997](#)). In blind taste tests, product liking has been reported to be a strong

predictor of appropriateness (Lähteenmäki & Tuorila, 1997). Based on the results presented here, one would predict that for products that are equally liked from a sensory point of view, the more familiar ones should be higher in perceived versatility of use. Recent results are indeed in line with this hypothesis (Geertsen, Allesen-Holm, & Giacalone, *accepted for publication*).

Furthermore, the impact of relevant consumer-related characteristics (demographic, psychographic and behavioral) on appropriateness of use evaluations is also a relevant topic for future research. Given that familiarity is primarily acquired through exposure, behavioral dimensions such as use frequency and overall familiarity with the product category should be particularly relevant because they are known to improve the evaluation of novel product elements independently, to a certain degree, of prior purchase and consumption of the target product (De Bont & Schoormans, 1995; Johnson & Russo, 1984). This means, for example, that consumers who are highly knowledgeable about wine may process elements of a wine they have not seen before (grape variety, vintage, sensory properties, etc.) more confidently, and thus infer possible usage situations more easily compared to less experienced wine drinkers. In the beer studies (Giacalone et al., 2015), there were some indications that consumers differing in consumption frequency and consideration set size had different orientations with regards to appropriateness evaluations (cf. Giacalone, 2013, p. 115). While possible to conduct such explorations with the current data, consumer segmentation was beyond the scope of this paper. Additionally, future research should also control for consumers' individual propensity to approach novel food items, as captured, for example, by the concept of food neophobia (Pliner & Hobden, 1992) and variety seeking (Van Trijp, Lähteenmäki, & Tuorila, 1992; Van Trijp & Steenkamp, 1992), which are likely to exert an independent effect on the appropriateness of new products.

Finally, there is also need to work further on the concept of appropriateness in the context of consumer food research. Situational appropriateness is an attitude and it is generally considered a proxy for consumer food choices in given usage situations (Boutrolle, Delarue, Arranz, Rogeaux, & Köster, 2007; Giacalone et al., 2015; Hersleth et al., 2005; Marshall, 1993; Schutz, 1988, 1994). This assumption, however, has not been the subject of much empirical scrutiny. In the future, comparing appropriateness of use evaluations vis-à-vis data on revealed preferences, or even situational dependency estimated by discrete choice experiments (e.g., Jaeger & Rose, 2008), would help to identify the actual behavioral correlates of the situational appropriateness construct. Additionally, since situational effects are important for other responses such as consumers' willingness to pay (Lusk, Fox, Schroeder, Mintert, & Koohmaraie, 2001) and usage intentions (Liang & Yeh, 2011), the potential integration of the IBU appropriateness approach in the design of context-oriented economic experiments should be explored.

7. Conclusions

This research has examined the role of product familiarity on consumer evaluation of situational appropriateness of foods and beverages. A series of studies across multiple product categories indicated that a positive link between familiarity and versatility of use exists. The familiarity heuristics is indicated as an underlying mechanism by which past behavior is used to infer situational appropriateness of foods and beverages.

This research thus supports previous claims that consumers may have difficulty identifying how to incorporate novel products into their existing dietary practices. Overall, the results obtained in the studies point at a moderate influence of familiarity on product-context associations, which are also contingent on specific product characteristics. Accordingly, a combination of targeted packaging design, retail strategies, and environmental interventions are indicated as possible strategies by which food product marketers may productively override such bias against novel products.

Future research is advised to address several key aspects left unaddressed by this research, such as the relative importance of product familiarity in relation to other product-related factors (e.g., brand), the potential for segmentation based on relevant consumer-related characteristics (e.g., usage frequency and product knowledge), the role of stimuli format in determining consumers associations between products and usage situations, and the nature of the relation between situational appropriateness and consumer food-related behavior.

Acknowledgements

Staff from the Plant & Food Research Sensory and Consumer Science team are thanked for their help with pilot work, data collection and preliminary data analysis. Financial support was received from Plant & Food Research and the New Zealand Ministry for Business, Innovation and Employment.

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