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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

DIRECCIÓN DE NUEVAS CREACIONES

E. S. D.

Re: Expediente No. **NC2021/0017697**

Solicitud de patente a nombre de **GIVAUDAN SA**

Yo, CAROLINA DAZA MONTALVO identificada como aparece al pie de mi firma, domiciliada en la Carrera 11 No. 86-53, obrando como apoderada de la sociedad **GIVAUDAN SA**, domiciliada en Vernier, Suiza, solicitante de la patente de la referencia, en respuesta al oficio No. **29** notificado electrónicamente el 8 de enero de 2025, relacionado con los requerimientos de fondo de la solicitud, y para el cual oportunamente solicité prorroga el pasado 28 de marzo de 2025, atentamente me permito presentar la siguiente información:

1. Título

En primera medida, con respecto a la observación sobre la falta de relación del título con el objeto de la solicitud contenido en la descripción y las reivindicaciones, me permito señalar que es deseo del solicitante modificar el título siguiendo la amable recomendación realizada por el examinador, de modo que ahora se lee:

" COMPOSICIÓN DE PERFUME"

En vista de lo anterior, amablemente solicito que la objeción al respecto se dé por superada.

2. Modificación al capítulo reivindicatorio:

Con fundamento en la facultad que confiere el artículo 34 de la Decisión 486 al solicitante para modificar la solicitud de patente en cualquier momento del trámite, presento junto a este memorial un nuevo capítulo reivindicatorio que consta de ocho (8) reivindicaciones, el cual reemplaza completamente la versión presentada el 22 de diciembre de 2021. Específicamente, se realizaron las siguientes modificaciones:

- 1.1 Se eliminaron las antiguas reivindicaciones 1, 2, y 12.
- 1.2 Las etapas a-d de la reivindicación 1, las etapas de f-h de la antigua reivindicación 4 y los valores de peso de la antigua reivindicación 2 se incluyeron en la antigua reivindicación 3 (nueva reivindicación 1).
- 1.3 Se eliminaron las modalidades más preferibles de la antigua reivindicación 5 (nueva reivindicación 2).
- 1.4 Se añadió una nueva reivindicación 3 en la cual se definen los componentes de las composición preparada en la etapa h). Esta reivindicación encuentra soporte en la descripción como fue originalmente presentada, en particular en las páginas 27 a 30 de la descripción y en la antigua reivindicación 8.
- 1.5 Las características de las antiguas reivindicaciones 6 y 7 se incluyeron en una nueva reivindicación independiente de producto (nueva reivindicación 4), la cual no incluye las modalidades preferidas ni tampoco el término y/o, que fue reemplazado por la conjunción "y".
- 1.6 Se eliminaron las modalidades preferidas mencionadas en las antiguas reivindicaciones 8, 9 y 10.
- 1.7 Se ajustó el lenguaje y la dependencia de las reivindicaciones de acuerdo a los cambios antes mencionados.

Estas modificaciones no amplían de ninguna manera la materia objeto de la presente solicitud, ya que se encuentran sustentadas en la descripción originalmente presentada y se realizan con el fin de definir la materia reclamada de forma clara, respondiendo a su vez las objeciones planteadas por su despacho.

3. Pago de tasas

Considerando que el presente memorial se presenta junto con modificaciones a las reivindicaciones, se adjunta recibo por concepto de pago de tasa de modificación a la solicitud, según lo establecido en la Resolución 59669 de 2020.

Adicionalmente me permito resaltar que no se realiza el pago de la tasa por concepto de reivindicaciones adicionales, dado que el nuevo capítulo reivindicatorio cuenta con 8 reivindicaciones.

Por otra parte, es deseo del solicitante requerir que, si el examinador considera que aún existen motivos que impidan la concesión de la solicitud, proceda a emitir un nuevo examen de patentabilidad, para lo cual se anexa el comprobante de pago por un nuevo examen de patentabilidad

4. Reivindicaciones relativas a uso

El examinador señala que el objeto de la antigua reivindicación 12 no sería patentable por cuanto se refieren al uso dado a la composición de perfume reclamada.

Al respecto, me permito manifestar que la reivindicación objetada no hace parte del capítulo reivindicatorio presentado junto a este memorial, superando así las objeciones del examinador.

5. Aplicación Industrial

El Examinador ha señalado que las anteriores reivindicaciones 1 a 5 carecerían de aplicación industrial, en la medida en que, en su opinión, se refieren a técnicas de investigación que no podrían ser utilizados para desarrollar productos comerciales o mejorar procesos industriales. En consecuencia, considera que no serían susceptibles de aplicación industrial en los términos del artículo 19 de la Decisión 486.

Frente a lo anterior, el Solicitante desea manifestar que, con las modificaciones introducidas al conjunto reivindicatorio, la nueva reivindicación independiente de método ya no se refiere únicamente a la evaluación del impacto de una composición de perfume de prueba, sino a un método para la preparación u optimización de una composición de perfume.

De esta manera, el método de la nueva reivindicación 1 facilita el desarrollo de la composición de perfume, eliminando etapas del proceso y haciéndolo más eficiente. Por lo tanto, la reivindicación 1 tiene carácter técnico, ya que permite crear una nueva composición de perfume con menos iteraciones durante el desarrollo (especialmente la etapa h). Gracias al método de la presente invención, el perfumista puede crear una composición de perfume que mejora o potencia el bienestar general del consumidor.

Este resultado se logra mediante la comparación de, en primer lugar, los ingredientes de perfume presentes en las composiciones de perfume que tienen un impacto positivo en el bienestar, identificando los atributos de olor comunes a las composiciones de perfume comparadas y desarrollando directrices para nuevas composiciones de perfume con una mayor proporción de los atributos de olor identificados (no ingredientes específicos). Por lo tanto, el objeto de la reivindicación 1 anexa al presente memorial tiene carácter técnico y es aplicable industrialmente.

6. Claridad, concisión y soporte de las reivindicaciones

El solicitante manifiesta que mediante la presentación del nuevo capítulo reivindicatorio quedan subsanadas la totalidad de las objeciones presentadas por el examinador en su concepto técnico, de modo tal que las nuevas reivindicaciones reclaman de manera clara y concisa la invención descrita. Con respecto a las objeciones específicas del examinador, me permito manifestar lo siguiente:

- 6.1** El Examinador señala que la reivindicación 6 no sería clara ni concisa, porque no define una composición en términos de sus características técnicas esenciales, es decir mencionando las cantidades de cada uno de los componentes sino indicando que comprende ingrediente de perfume de tres grupos caracterizados por su "atributo de olor diferente", lo que implicaría un sinnúmero de posibilidades que no han sido exploradas por el solicitante.

Con respecto a la expresión "atributos de olor", que ha sido considerada como poco clara por el examinador, el solicitante se permite señalar que dicha expresión es completamente clara para la persona normalmente versada en la materia, esto es, un perfumista. De hecho, el uso de atributos de olor para la clasificación de ingredientes de fragancias es una práctica común en el campo de los sabores y fragancias, y la persona normalmente versada en la materia conoce bien estas clasificaciones y los ingredientes de sabor o fragancia que pertenecen a cada grupo. Esto se sustenta, por ejemplo, en una página web desarrollada para proporcionar información a la industria de los sabores, la alimentación y las fragancias, "Good Scents Company", que ofrece una lista de tipos de olor para ingredientes de perfumes y sabores (<http://www.thegoodscentscompany.com/allodor.html>).

Para una mejor referencia del examinador, se adjuntan copias en PDF de los atributos de cítricos, naranja y cítrico-naranja, denominados "descriptores de olor". Estos documentos fueron descargados el 23 de febrero de 2023. Para cada tipo de olor, se

indica una lista de ingredientes de fragancia adecuados que pertenecen a dicho tipo. El experto en la materia comprendería que, para "cítrico-naranja", necesitaría buscar en las colecciones de fragancias descriptores de olor cítricos que incluyan, en particular, descriptores de olor a naranja, siendo la naranja un descriptor de segundo nivel de los cítricos. El perfumista detectará cambios en el perfil olfativo, incluso si se añade o se omite una sola sustancia, y mucho más si un atributo olfativo falta por completo.

Además, el solicitante se permite señalar que las reivindicaciones 3 y 5 definen ingredientes específicos con los atributos de olor identificados. Por lo tanto, contrario a lo mencionado por el examinador, no existen innumerables posibilidades para ingredientes con un atributo de olor determinado.

En vista de lo anterior, respetuosamente se solicita reconsiderar la objeción al respecto.

6.2 El Examinador señala que las reivindicaciones 6 a 8 no son claras, porque caracterizan los componentes de la composición a través de nombres de fragancias comerciales o atributos de olor, los cuales no son sustancias estandarizadas en todo el mundo. Se sugiere reemplazar los nombres por el nombre químico del compuesto responsable de la fragancia.

En este sentido, el solicitante desea resaltar que, la nueva reivindicación 4 (basada en la antigua reivindicación 6) se limita ahora las cantidades de ingredientes con los atributos de olor específicos, según lo requerido por el examinador. Además, como se mencionó anteriormente, los atributos de olor (nuevas reivindicaciones 3 y 5) se definen en términos de una lista cerrada de ingredientes que proporcionan dicha dirección de olor.

En vista de lo anterior, se solicita amablemente dar por superadas las objeciones en este aspecto.

6.3 El Examinador manifiesta que la reivindicación 7 no sería clara porque utiliza la expresión "aldehídos de naranja natural" para reclamar un componente, lo cual no define correctamente la materia a reclamar.

Al respecto, el solicitante se permite señalar que los aldehídos son componentes bien conocidos en composiciones de perfumes, por lo tanto, dicho término simplemente define la subclase específica de aldehídos de perfumería.

6.4 El Examinador alega que las reivindicaciones 9 y 10 no son claras, porque reclaman ingredientes de perfume por sus nombres químicos y no por los atributos de olor descritos en las reivindicaciones 6 a 8 de las cuales dependen.

Frente a lo anterior, el solicitante desea señalar que las nuevas reivindicaciones 6 y 7 (basadas en las antiguas reivindicaciones 9 y 10) definen ingredientes específicos, como indol (reivindicación 6) y Dam-ascenona (reivindicación 7), los cuales han sido clasificados previamente en las reivindicaciones precedentes como pertenecientes a los ingredientes con atributos de olor animálico-fecal y afrutado-confitado, respectivamente. De esta manera, dichas reivindicaciones simplemente definen una combinación específica de ingredientes, que constituye una realización de la invención.

En vista de lo anterior, se solicita amablemente dar por superadas las objeciones en este aspecto.

6.5 El Examinador menciona que las reivindicaciones 6 a 10 no son claras, porque contiene los términos "*al menos*", "*más particularmente*", "*y/o*" para definir los componentes y las proporciones de los componentes, términos que no permiten definir las proporciones y características de los componentes.

Al respecto, el solicitante manifiesta su desacuerdo con la opinión del examinador, toda vez que los términos objetados son completamente claros para la persona normalmente versada en la materia en el contexto de la reivindicación.

En concreto, el solicitante respetuosamente manifiesta que el término "*al menos*" es esencial para definir el objeto definido en las reivindicaciones, ya que establece un valor mínimo. Por ejemplo, la reivindicación 7 define al menos cinco ingredientes que pueden seleccionarse. De esta manera, eliminar dicha expresión restringiría la reivindicación a exactamente cinco ingredientes, lo que permitiría a un posible infractor eludirla fácilmente. Por lo tanto, se solicita que se permita dicho término en las reivindicaciones. Esta misma lógica puede aplicarse a la expresión "*y/o*", que permite establecer de forma clara y sencilla realizaciones alternativas de la reivindicación. Además, el solicitante desea señalar que estas expresiones son perfectamente claras para la persona normalmente versada en la materia, quien no tendría dificultades en comprender el alcance de las reivindicaciones.

No obstante, con el fin de avanzar en el trámite de la solicitud, el solicitante ha eliminado las expresiones "*preferiblemente*" o "*particularmente*", de forma que ya no hace parte del pliego reivindicatorio.

En vista de lo anterior, se solicita amablemente dar por superadas las objeciones en este aspecto.

6.6 El Examinador asegura que la reivindicación 11 no es clara, porque reclama un producto por contener la composición y no a través de sus componentes y proporciones.

Al respecto, el solicitante indica que la reivindicación 8 (basada en la antigua reivindicación 11), simplemente cubre un producto ulterior que comprende la composición de perfume de las nuevas reivindicaciones 4 a 7. De esta manera, como comprendería la persona normalmente versada en la materia, las particularidades solicitadas por el examinador, esto es, la cantidad de la composición de perfume y la base en un producto de consumo, dependerán de la aplicación pretendida, y, por lo tanto, quedará en manos del cliente que emplea la composición de perfume de la invención.

En vista de lo anterior, se solicita amablemente dar por superadas las objeciones en este aspecto.

En vista de lo anterior, las objeciones relacionadas con la claridad, la concisión y el soporte en la descripción del capítulo reivindicatorio, han quedado completamente superadas.

7. Descripción

El examinador indica que la descripción no divulga la materia reclamada de manera suficiente para que una persona normalmente versada en la materia pueda ejecutarla o reproducirla, por lo que no cumpliría con las disposiciones del Art. 28 de la Decisión Andina 486.

En particular, el examinador señala que el capítulo descriptivo no presenta evidencia de una composición de perfume que comprenda "cualquier" atributo de olor seleccionado de "cítrico-mandarina", "cítriconaranja", "floral-flor de naranja", "animálico-fecal", "floral- medicinal", "afrutado-fruta confitada", "picante-canela", "dulce-tonka", "cítrico-

lima" y "picante-clavo"; preferiblemente del grupo que consiste en "cítrico-mandarina", "cítrico-naranja", "floralflor de naranja", "animálico- fecal", "floral-medicinal" y "afrutado-fruta confitada", pues en los ejemplos 1 a 3 se describen algunas composiciones, pero no queda claro con cual de estas se genera bienestar para un humano.

Al respecto, el solicitante hace notar que la nueva reivindicación 1 se refiere a un método para la preparación y optimización de una composición de perfume que consta esencialmente de dos partes: los pasos a) a d) definen un método para determinar el impacto de una composición de perfume en seres humanos, mientras que los pasos e) a h) definen un método para preparar la composición de perfume, incorporando el aprendizaje sobre el bienestar obtenido en los pasos a) a d).

El Ejemplo 1A (publicación WO: página 17) proporciona información sobre el desarrollo de los 18 atributos de bienestar. De un amplio subconjunto (véase también página 4/línea 19 - línea 33), se identificaron 18 atributos como los más relevantes. Curiosamente, también se determinó que los atributos asociados con aspectos sociales eran irrelevantes, al menos en lo que respecta a las composiciones de perfume (página 5/párrafo 1).

Para una evaluación objetiva y cuantificable del bienestar, fue necesario correlacionar cada uno de los 18 atributos identificados con una puntuación individual. Esto se realizó mediante un análisis factorial, completando dos medidas de referencia de dichos atributos (ejemplo 1A: líneas 11-13). Con base en este análisis, fue posible asignar una puntuación individual a los 18 atributos de bienestar previamente identificados (página 18/tabla 2). La puntuación general se calcula multiplicando la puntuación de cada atributo de bienestar por su ponderación correspondiente para formar un producto y sumando estos productos para todos los atributos de bienestar. Las páginas 5 y 6 también ofrecen más información al respecto.

Así, se estableció un método objetivo basado en puntuaciones para evaluar el bienestar general de un sujeto humano al ser sometido a una composición de perfume de prueba.

En el ejemplo 2 se investigó el potencial de las composiciones de perfume para mejorar el bienestar, sometiendo 18 composiciones de perfume de aceptación general a la métrica de bienestar previamente establecida. Con base en esto, se determinó que algunos atributos olfativos, pero no todos, tienen una buena puntuación en términos de mejora del bienestar (página 20/líneas 9-20). Por lo tanto, la puntuación de bienestar

general obtenida al sumar las puntuaciones individuales de los 18 atributos permite discriminar las composiciones de perfume probadas y identificar los atributos olfativos responsables de mejorar el bienestar en un sujeto humano. Finalmente, el ejemplo 3 proporciona evidencia de que el simple gusto y/o la intensidad de una composición de perfume de prueba están desvinculados de su efecto sobre el bienestar.

En resumen, los ejemplos, junto con la descripción, ofrecen información para determinar una puntuación de bienestar y, posteriormente, su aplicación para determinar objetivamente los atributos olfativos responsables de mejorar el bienestar. Un perfumista cualificado puede combinar los atributos olfativos identificados en una composición de perfume basada en la hedonística requerida.

Asimismo, considero importante traer a colación las disposiciones del Manual Andino con respecto al sustento descriptivo, en donde se establece lo siguiente:

"La invención puede considerarse suficientemente descrita si se aporta uno o más ejemplos, modos de realización alternativos o variaciones que habilitan a la persona versada en la materia técnica para que, aplicando sus conocimientos técnicos generales, pueda poner en práctica la invención en toda el área reivindicada y no solo algunas modalidades particulares reivindicadas, sin que para ello requiera desplegar un esfuerzo inventivo. Sin embargo, la presentación de ejemplos relativos a todas las especies particulares de la invención o a cada alternativa reivindicada no será necesaria para encontrar una suficiencia de la descripción, siempre y cuando dichas especies se mencionen en esta." (Numeral 3.1.2, página 42)

Como puede observarse, el espíritu de la normativa vigente no es el de requerir que las reivindicaciones estén limitadas únicamente a los ejemplos presentados en la descripción, sino que estos ejemplos sirvan como guía para que la persona normalmente versada en el campo técnico esté en capacidad de reproducir la invención.

De esta forma, el solicitante desea resaltar que los ejemplos de la solicitud proporcionan la información necesaria para que la persona normalmente versada en la materia comprenda y reproduzca la invención como se reclama en el nuevo capítulo reivindicatorio. Por lo tanto, la descripción proporciona toda la información necesaria para llevar a cabo la invención y cumple con los requisitos legales establecidos en la Decisión Andina 486.

8. Novedad

El examinador afirma en su concepto técnico que las antiguas reivindicaciones 6 a 11, no serían nuevas a la luz de las enseñanzas del documento D1 (WO2018/206297).

En este sentido, quisiera destacar que el artículo 16 de la Decisión 486 de la Comisión de la Comunidad Andina establece que la invención se considera nueva cuando no está incluida en el estado de la técnica. Es decir, según el espíritu de la norma legal indicada, la invención no se considera nueva si está "comprendida" en el estado de la técnica, dicha norma se refiere, por supuesto, a la invención en su totalidad y no a sus componentes de forma aislada.

A este respecto, considero pertinente subrayar que, para considerar que el objeto de la solicitud no es nuevo, deben tenerse en cuenta al menos los siguientes aspectos:

- El objeto de la invención objeto de estudio debe estar contenido TOTAL y ABSOLUTAMENTE en el documento mencionado anteriormente; y
- La comparación del objeto de la invención en cuestión y el estado de la técnica no debe centrarse ni limitarse a los elementos de esta que se conocen previamente, sino de lo inédito y novedoso que la caracteriza. Esto significa que debe analizarse el valor añadido que aporta la invención con sus nuevas características al campo técnico al que pertenece la solicitud en estudio.

Esto significa que, para que un documento del estado de la técnica afecte a la novedad de una solicitud, debe revelar todas y cada una de las características técnicas que lo definen.

Cabe señalar que el examinador considera que el documento D1 anticipa el objeto de la presente solicitud porque divulga composiciones de fragancias adecuadas para mejorar el estado de ánimo de un sujeto, de un ser humano, productos que contienen las mismas, así como usos y métodos de tales composiciones y productos.

En este sentido, el solicitante se permite resaltar que no tiene conocimiento de que exista técnica anterior que divulgue todas las características de la reivindicación 1 presentada junto a este memorial. Por lo tanto, la reivindicación 1 es novedosa. Asimismo, el solicitante se permite resaltar que, dado que las reivindicaciones 2 y 3 dependen de la reivindicación 1, ambas reivindicaciones también son novedosas.

De otro lado, el solicitante desea resaltar que la reivindicación 4 se ha modificado para detallar mejor los diferentes ingredientes que tienen los atributos de olor en la medida necesaria, uniendo las reivindicaciones 6 y 7, tal como se presentaron originalmente, y eliminando cada "o" entre los diferentes atributos, es decir, combinando todos los atributos de olor en la composición del perfume. Las cantidades indicadas en la reivindicación 4 no resultan de una selección arbitraria, por el contrario, son esenciales para proporcionar un perfil de olor completo. La combinación de todos los atributos de olor, como se menciona en la nueva reivindicación 4, y en particular las cantidades específicas de los atributos de olor, no se divulga en D1. Por lo tanto, la reivindicación 4 es novedosa con respecto a D1. Las reivindicaciones 5 a 8 dependen de la reivindicación 4 y, por lo tanto, también son novedosas con respecto a D1.

Así pues, dado que el documento D1 no divulga de manera TOTAL Y ABSOLUTA las características técnicas esenciales de la materia definida en la nueva reivindicación independiente, es posible concluir que la presente solicitud cumple el requisito de novedad estipulado en el artículo 16 de la Decisión 486.

9. Nivel inventivo

Si bien no se presentaron objeciones con respecto a este requisito, el solicitante se permite presentar los siguientes argumentos:

Con respecto a lo anterior, me permito resaltar las disposiciones del artículo 18 de la Decisión 486 de la Comisión de la Comunidad Andina, que establecen que *"se considerará que la invención tiene nivel inventivo, si para una persona del oficio normalmente versada en la materia técnica correspondiente, esa invención no hubiese resultado obvia ni se hubiese derivado de manera evidente del estado de la técnica"*.

Lo anterior significa que el análisis de nivel inventivo NO es una comparación de los objetos de las anterioridades y la solicitud en estudio. Por el contrario, el análisis de nivel inventivo debe demostrar la obviedad de la invención y establecer cómo ésta no contiene un salto cualitativo, que demuestre su altura inventiva, teniendo en cuenta que se hace necesario demostrar que la invención analizada carece de nivel inventivo y hubiese sido obvia para una persona versada en la materia.

Antes de abordar la actividad inventiva, es importante señalar que el bienestar es un fenómeno intensamente investigado. El objeto de la presente reivindicación 1 aborda

dos componentes importantes del bienestar: el afectivo y, fundamentalmente, el cognitivo (publicación de WO: página 1 / líneas 8-20).

Estos aspectos también se han identificado en la literatura académica como parte del bienestar general.

Como ejemplo, Huppert et al. (página 1331: columna derecha / párrafo 3; véase el anexo) mencionan lo siguiente:

"Los estados psicológicos positivos se ejemplifican mediante emociones como la felicidad y la satisfacción, actitudes como la generosidad y la empatía, y procesos mentales como las capacidades cognitivas, el interés y la motivación. Los estados físicos positivos se caracterizan por la vitalidad y las capacidades físicas, mientras que los estados sociales positivos incluyen vínculos sociales satisfactorios y relaciones afectivas".

Otro artículo de Arthaud-day et al. (véase adjunto) describe el concepto de "bienestar" en tres dominios: (1) evaluaciones cognitivas de la propia vida (es decir, satisfacción vital o felicidad); (2) afecto positivo; y (3) afecto negativo. Una publicación más reciente de Costa et al. (véase adjunto) también analiza los predictores del bienestar subjetivo, identificando elementos cognitivos, afectivos (es decir, emociones) y contextuales, lo que ilustra nuevamente que el bienestar va más allá de las emociones positivas, sino que se relaciona con los objetivos, la motivación y la satisfacción vital. Por lo tanto, la literatura académica muestra la complejidad del concepto de "bienestar", que la presente solicitud pretende descifrar, y demuestra que el bienestar va más allá de los aspectos afectivos (emociones) e incorpora también aspectos cognitivos.

Si bien el bienestar se ha medido mediante cuestionarios de autoinforme, no existía un sistema objetivo basado en puntuaciones en la técnica. El objeto de la presente solicitud aborda este problema en particular.

La reivindicación 1 de la presente solicitud de patente se refiere a un método de preparación y optimización de una composición de perfume para mejorar el bienestar de una persona, mediante la evaluación del impacto de ciertos atributos olfativos en dicho bienestar y la creación de una nueva composición de perfume con una mayor proporción de ingredientes perfumados que tienen un efecto positivo en dicho bienestar.

Los documentos D1 a D5 (a continuación) fueron citados en el Reporte de Búsqueda Internacional (ISR), entre los cuales se encuentra el documento D1 citado en el Oficio que aquí se responde. Por lo tanto, se presentan argumentos a continuación relacionados con el nivel inventivo, a pesar de que en la acción oficial solo se presentaron objeciones sobre la aplicabilidad industrial de las reivindicaciones 1 a 3 de método.

El estado de la técnica más cercano podría ser el D1, ya que comparte muchas características con la presente invención y, al menos, también pretende mejorar el estado de ánimo. Todos los demás documentos comparten menos características, optan por un método diferente para determinar el impacto de las composiciones de perfume en los sujetos de prueba o tienen un propósito distinto al de la presente invención:

D2 (EP1343466) utiliza métodos diferentes para determinar el estado de ánimo de los sujetos humanos mediante electroencefalografía (EEG), lo que significa que es menos adecuado que el D1, ya que utiliza una técnica diferente para determinar las reacciones a una composición de perfume.

D3 (EP1898865) divulga composiciones que mejoran el estado de ánimo, pero no proporciona ninguna solución para obtenerlas. No proporciona ninguna evaluación de los sujetos de prueba ni mide el impacto de una composición de fragancia en el estado de ánimo.

D4 (EP1661973) divulga composiciones de fragancia que influyen en la sensación térmica de un sujeto, pero no en el estado de ánimo de una persona.

D5 (US2011/092604) describe composiciones de fragancias que pueden tener ingredientes de perfume superpuestos. Sin embargo, no describe el impacto de las composiciones en el estado de ánimo ni en el bienestar de un sujeto humano.

Ahora bien, el solicitante se permite señalar que D1 no describe un método específico para evaluar el impacto de las composiciones de perfume en el bienestar con todos los pasos a) a h) de la nueva reivindicación 1. D1 no describe los pasos a) a d) de la presente invención, que proporcionan una medida objetiva del bienestar con aspectos afectivos y cognitivos. D1 solo proporciona aspectos afectivos para mejorar el estado de ánimo. D1 describe en el ejemplo 3 que la "Rueda Emocional" utilizada para medir las reacciones emocionales a objetos, eventos y situaciones en la prueba de D1 refleja

únicamente el estado emocional de los sujetos de prueba y no mide el impacto cognitivo de una composición de perfume de prueba.

Así, la presente invención difiere de D1 en que requiere que los sujetos evalúen su bienestar en ausencia de una composición de perfume de prueba mediante la puntuación de varios atributos de bienestar (paso a). D1 no calcula una puntuación base de bienestar en ausencia de la composición de perfume de prueba multiplicando la puntuación de cada atributo de bienestar por su ponderación correspondiente para formar un producto y sumando estos resultados para todos los atributos de bienestar (paso b); repitiendo los pasos a) y b) en presencia de la composición de perfume de prueba para determinar una puntuación de bienestar con dicha composición (paso c); además, D1 utiliza emociones y descriptores de emoción diferentes a los de la presente invención.

El efecto técnico resultante de estas diferencias es que, con la técnica anterior, solo se puede medir y determinar el estado emocional de los sujetos de prueba, pero no el impacto cognitivo que una composición de perfume de prueba tiene en ellos. Es decir, la presente invención implementa un aspecto más objetivo del impacto de la composición de prueba e incluso puede transmitir efectos sinérgicos. Es más, a partir de este método se pueden derivar directrices generales para un desarrollo más sencillo y acelerado de composiciones de perfume.

El problema técnico se puede deducir como la necesidad de proporcionar medios para crear y desarrollar nuevas composiciones de perfumes que mejoren el bienestar objetivamente, con menos iteraciones y menos pasos de desarrollo, incluyendo aspectos cognitivos objetivados y parámetros de bienestar.

El método D1 solo permite al perfumista crear composiciones de perfumes que puedan gustar al consumidor y que sean beneficiosas para su estado emocional. Sin embargo, el perfumista, siguiendo la invención de D1, no puede crear composiciones de perfumes que también sean objetivamente beneficiosas para el bienestar cognitivo del cliente.

D1 puede presentar un problema similar desde el principio, concretamente, hacer que un término "no medible" sea medible, es decir, permitir la medición y cuantificación objetiva de un efecto técnico subjetivo. Sin embargo, D1 no proporciona una solución al problema de la presente invención, y no se proporciona ninguna pista sobre cómo medir objetivamente el impacto de una composición de perfume en los aspectos afectivos y cognitivos del bienestar de un sujeto humano ni utilizar esta información

para adaptar las composiciones de perfume que mejoran el bienestar general. Sin resolver el problema de proporcionar una evaluación más objetiva y completa del bienestar, el desarrollo de una composición de perfume no se vuelve más eficiente y no se pueden reducir las iteraciones en el desarrollo.

Por lo tanto, el objeto de la reivindicación 1 no es obvio con respecto a D1 e implica actividad inventiva. Dado que las reivindicaciones 2 y 3 dependen de la reivindicación 1, también las reivindicaciones 2 y 3 son inventivas.

La reivindicación 4 se refiere a una composición de perfume que comprende diez atributos olfativos particulares. El estado de la técnica más cercano a la reivindicación 4 puede ser D1, por las mismas razones expuestas anteriormente.

La invención de la reivindicación 4 difiere de D1 en que, en la reivindicación 4, todos los atributos olfativos enumerados se combinan en una misma composición de perfume, mientras que en D1 se combinan diferentes compuestos que forman los grupos de impresiones olfativas almizcladas, amaderadas, frescas y/o verdes, florales y afrutadas. Algunos de estos compuestos pueden solaparse con la composición de perfume de la reivindicación 4, pero carecen de los atributos olfativos afrutados a fruta confitada, habana dulce, fecal animalico, clavo picante y canela picante.

El efecto técnico resultante de esta diferencia es que las composiciones de perfume particulares mejoran el bienestar, y los ingredientes se seleccionan mediante los métodos descritos en este documento. Por tanto, el problema técnico objetivo que se deduce a partir de D1 es proporcionar una composición de perfume que mejore objetivamente el bienestar de un sujeto humano en un aspecto afectivo y cognitivo.

Como se explicó anteriormente, D1 no puede ofrecer la misma objetividad al medir el impacto de las composiciones de perfume de prueba, que tienen aspectos afectivos y cognitivos en los sujetos de prueba. Su combinación añade una capa adicional de sensaciones, fomentando una sinergia que los aspectos por sí solos no pueden proporcionar; es decir, una medida objetiva del bienestar general. El estado de la técnica solo intenta capturar los aspectos emocionales y no proporciona ninguna pista ni sugerencia sobre el rendimiento cognitivo de la composición de perfume de prueba ni sobre el bienestar del sujeto humano. D1 solo conduce a composiciones de perfume que agradan al sujeto de prueba, no a una composición de perfume que también sea beneficiosa para el bienestar general de la persona.

Por lo tanto, la reivindicación 4 y las reivindicaciones dependientes 5 a 8 no son obvias con respecto a D1 y, por lo tanto, son inventivas. Ninguna de las demás reivindicaciones citadas proporciona motivación adicional a un experto en la materia.

Teniendo en cuenta lo anteriormente expuesto, queda claro que las características técnicas de la materia definida en el capítulo reivindicatorio presentado junto al presente memorial no se derivan de manera obvia o evidente de las enseñanzas de D1 y D2. Por lo tanto, el objeto reclamado cumple con el requisito de Nivel inventivo establecido en el Art. 18 de la Decisión 486.

10. Conclusión

Con las modificaciones introducidas y los argumentos presentados puede concluirse que:

- i) El nuevo título de la solicitud es claro y se relaciona con el objeto reclamado, cumpliendo así con el literal d) del artículo 27 de la Decisión 486 de 2000;
- ii) El nuevo pliego reivindicatorio se ajusta a las disposiciones del Artículo 34 de la Decisión 486/00;
- iii) La invención de la presente solicitud es clara y cuenta con el debido sustento en el capítulo descriptivo, a la vez que se encuentra divulgada de manera suficientemente completa, cumpliendo así con los requerimientos de los Artículos 30 y 28 de la Decisión 486;
- iv) La presente invención se relaciona con materia susceptible de patentabilidad, cumpliendo así con los requerimientos del Artículo 14 de la Decisión 486;
- v) La invención de la presente solicitud no había sido divulgada previamente en el estado de la técnica cumpliendo así con los requerimientos del Artículo 16 de la Decisión 486; y
- vi) La invención de la presente solicitud no resulta obvia ni se derivada de manera evidente del estado de la técnica, cumpliendo así con los requerimientos del Artículo 18 de la Decisión 486.

Por tanto, atentamente me permito solicitar a ese Despacho otorgar el privilegio de patente solicitado a la solicitud en estudio, toda vez que cumple a cabalidad con los requerimientos de la Decisión 486 de 2000.

Asimismo, respetuosamente solicito a ese Despacho pronunciarse en relación con todos los argumentos presentados en este memorial dando estricta aplicación al principio del debido proceso consagrado en el artículo 29 de la Constitución Nacional.

11. Anexos

- Nuevo capítulo reivindicatorio conformado por ocho (8) reivindicaciones.
- Descripción de olores para cítricos, naranja y cítrico-naranja
- Investigación de Huppert *et al.*
- Investigación de Arthaud-day *et al.*
- Investigación de Costa *et al.*
- Recibo de pago por concepto de modificaciones a las reivindicaciones y nuevo examen de patentabilidad.

Señora Directora,


CAROLINA DAZA MONTALVO
C.C. 66.783.790 de Palmira Valle
TP-141563 CSJ
notificaciones@clarkemodet.com.co

REIVINDICACIONES

1. Un método para preparar u optimizar una composición de perfume para mejorar el bienestar de un sujeto humano, caracterizado porque comprende las etapas de:

determinar el impacto de una o más composiciones de perfume en el bienestar de sujetos humanos mediante:

a) hacer que uno o más sujetos humanos evalúen su bienestar en ausencia de la composición de perfume de prueba calificando una pluralidad de atributos de bienestar;

i) en donde los atributos de bienestar incluyen "no ansioso", "no triste", "no inquieto", "no frustrado", "no estresado", "feliz", "optimista", "emocionado", "satisfecho", "motivado", "vigorizado", "interesado", "no aburrido", "no fatigado", "mentalmente alerta", "tranquilo", "relajado" y "paciente"; y

ii) donde cada atributo de bienestar tiene un peso;

b) calcular una puntuación de bienestar base en ausencia de la composición del perfume de prueba, multiplicando la puntuación de cada atributo de bienestar por el peso correspondiente para formar un producto y sumando estos productos sobre todos los atributos de bienestar;

c) repetir los pasos a) y b) en presencia de una composición de perfume de prueba para determinar una puntuación de bienestar con la composición de perfume de prueba; y

d) determinar el impacto de la composición de perfume de prueba en el bienestar, restando la puntuación de bienestar base de la puntuación de bienestar con la composición de perfume de prueba.

en donde los pesos de los atributos de bienestar son los siguientes:

atributo de bienestar	peso
"no ansioso"	10.65%
"no triste"	10.32%
"no inquieto"	9.84%
"no frustrado"	9.65%
"no estresado"	7.54%

"contento"	4.70%
"optimista"	4.61%
"emocionado"	4.13%
"satisfecho"	3.91%
"motivado"	3.34%
"vigorizado"	3.31%
"interesado"	6.12%
"no aburrido"	5.88%
"no fatigado"	4.59%
"Mentalmente alerta"	4.41%
"tranquilo"	2.66%
"relajado"	2.24%
"paciente"	2.10%

e) seleccionar una composición de perfume con impacto positivo sobre el bienestar.

f) comparar los ingredientes de perfume presentes en aquellas composiciones de perfume que tienen un impacto positivo sobre el bienestar;

g) identificar los atributos de olor comunes a esas composiciones de perfume;
y

h) crear una nueva composición de perfume con una proporción aumentada de ingredientes de perfume con los atributos de olor identificados en el paso g).

2. El método de conformidad con la reivindicación 1, caracterizado porque en el paso h), se incrementa la proporción de uno o más ingredientes de perfume que tienen atributos de olor seleccionados del grupo que consiste en "cítrico-mandarina", "cítrico-naranja", "floral-flor de naranja", "animálico-fecal", "floral-medicinal", "afrutado-fruta confitada", "picante-canela", "dulce-tonka", "cítrico-lima" y "picante-clavo".

3. El método de acuerdo con la reivindicación 2, en donde dicha nueva composición de perfume creada en el paso h) comprende:

- uno o más ingredientes de perfume que tienen un atributo de olor "cítrico-naranja", seleccionados del grupo que consiste en aceites de naranja y

reconstituciones de naranja, tales como aceite crudo de naranja de Brasil, aceite de toronja, aceite de naranja, aceite amargo de naranja, aceite de sangre de naranja; aceite de naranja incoloro, aceite de naranja concentrado, esencia de naranja, terpenos de naranja, aceite de fase bigarada, aceite de tangelo, carbonilos y aldehídos de naranja natural y mezclas de los mismos; y/o

- uno o más ingredientes de perfume que tienen un atributo de olor "cítrico-lima", seleccionados del grupo que consiste en cimeno para (4-metil-1-isopropilbenceno), aceite de cedrat, citratal R (1,1-dietoxi-3,7-dimetilocta-2,6-dieno), delta-3-careno (3,7,7-trimetilbiciclo[4.1.0]hept-3-eno), dipenteno (1-metil-4-(prop-1-en-2-il)ciclohex-1-eno), aceite de elemi, resinoide de elemi al 50% en benzoato de bencilo, aceite de fase verde de limón, dienos de lima, aceite de lima destilado, aceite lima exprimido, óxido de lima, reconstitución de terpenos de lima, ocimeno ((E)-3,7-dimetilocta-1,3,6-trieno), terpineno alfa (1-metil-4-propan-2-ilciclohexa-1,3-dieno), terpineno gamma (1-metil-4-propan-2-ilciclohexa-1,4-dieno), terpineol (2-(4-metil-3-ciclohexen-1-il)-2-propanol) y terpinoleno (1-metil-4-propan-2-ilidenciclohexeno) y mezclas de los mismos; y/o
- uno o más ingredientes de perfume que tienen un atributo de olor "cítrico-mandarina", seleccionados del grupo que consiste en aceite clementina, antranilato de dimetilo (2-metilaminobenzoato de metilo), aceite de mandarina, aceite de madarina incoloro, aceite verde de mandarina, aceite amarillo de mandarina, aceite de fase de mandarina, aceite de tamarindo, reconstituciones de tamarindo, aceite de tangerina, reconstitución de tangerina, tangerinol (acetato de (E)-6,10-dimetilundeca-5,9-dien-2-ilo) y mezclas de los mismos; y/o
- uno o más ingredientes de perfume que tienen un atributo de olor "dulce-tonka", seleccionados del grupo que consiste en biciclo nonalactona (3,4,4a,5,6,7,8,8a-octahidrocromen-2-ona), cumarina (cromen-2-ona) y tolil aldehído para (4-metilbenzaldehído), reconstitución de cumarina, aceite de flouve, reconstitución de flouve, aceite de heno, heno absoluto, koumalactona (3,6-dimetil-3a,4,5,6,7,7a-hexahidro-3H-benzofuran-2-ona), absoluto de malvavisco, absoluto de mate, reconstitución de mate, metil-octalactona (5-butil-4-metiloxolan-2-ona), toncarosa (3-(2-hidroxifenil)acrilato de (E)-dec-9-en-1-ilo), absoluto de ajonjolí tostado, absoluto de hoja de tabaco, absoluto de tonka, absoluto de tonka incoloro, aceite de haba tonka, acetanisol (1-(4-metoxifenil)etanona), acetofenona extra (1-feniletanona), aldehído anísico (4-metoxibenzaldehído), alcohol anisílico ((4-metoxifenil)metanol), aubepina paracresol (4-

- metoxibenzaldehído), cristales de dimetil-hidroquinona (1,4-dimetoxibenceno), cristales de heliotropina (benzo[d][1,3]dioxol-5-carbaldehído), aldehído hidratópico (2-fenilpropanal), metil-acetofenona (1-(p-tolil) etanona), mimosa absoluta, veratril aldehído (3,4-dimetoxibenzaldehído) y mezclas de los mismos; y/o
- comprende uno o más ingredientes de perfume que tienen un atributo de olor "afrutado-fruta confitada", seleccionado del grupo que consiste de cristalón (2,6,6-trimetilciclohexa-1,3-dieno-1-carboxilato de etilo), givescóna (2-etil-6,6-dimetilciclohex-2-eno-1-carboxilato de etilo), damascenona ((E)-1-(2,6,6-trimetilciclohexa-1,3-dien-1-il) but-2-en-1-ona), damascona alfa ((E)-1-(2,6,6-trimetil-1-ciclohex-2-enil)but-2-en-1-ona), damascona beta ((E)-1-(2,6,6-trimetil-1-ciclohexenil)but-2-en-1-ona), damascona delta (1-(2,6,6-trimetil-1-ciclohex-3-enil)but-2-en-1-ona); y/o
 - uno o más ingredientes de perfume que tienen un atributo de olor "flor de naranja floral", seleccionados del grupo que consiste en reconstituciones de flor de naranja, antranilato de metilo (2-aminobenzoato de metilo), cristales de naranja (1-naftalen-2-iletanona), 1asm en sambac aceite y mezclas de los mismos; y/o
 - uno o más ingredientes de perfume que tienen un atributo de olor "floral-medicinal", seleccionados del grupo que consiste en yara samba (2-metoxinaftaleno), cresil metil éter para (1-metoxi-4-metilbenceno), etil benzoato, etil salicilato, metil reconstituciones de benzoato, salicilato de m etilo, flores de tubérculo y mezclas de los mismos; y/o
 - uno o más ingredientes de perfume que tienen un atributo de olor a "clavo picante", seleccionados del grupo que consiste en acetato de eugenilo ((2-metoxi-4-prop-2-enilfenil) acetato), acetil isoeugenol (2-metoxi-4-prop acetato de l-en-2-ilfenol), aceite de hoja de clavo crudo, incoloro y rectificado, dihidroeugenol (2-metoxi-4-propilfenol), eugenol (2-metoxi-4-prop-2-enilfenol) e isoeugenol (2-metoxi-4-prop-1-en-2-ilfenol) y mezclas de los mismos; y/o
 - uno o más ingredientes de perfume que tienen un atributo de olor "animal-fecal", seleccionados del grupo que consiste en indol e indoleno (8,8-bis (1H-indol-3-il) -2,6-dimetiloctan-2-ol), indoflor (4,4a,5,9b-tetrahidroindeno [1,2-d] [1,3] dioxina) y mezclas de los mismos; y/o
 - uno o más ingredientes de perfume que tienen un atributo de olor a "canela picante", seleccionados del grupo que consiste en aldehído cinámico (3-fenilprop-2-enal), cinamalva ((E)-3-fenilprop-2-enenitrilo), aceite de corteza de canela; aldehído m etil cinámico ((z) -2-metil-3-fenilacrilaldehído), y mezclas de los mismos.

4. Una composición de perfume que comprende ingredientes de perfume de al menos tres grupos, cada uno de los cuales tiene un atributo de olor diferente, caracterizada porque los atributos de olor de los grupos se seleccionan del grupo que consiste en "cítrico-mandarina", "cítrico-naranja", "floral-flor de naranja", "animálico-fecal", "floral-medicinal", "afrutado-fruta confitada", "picante-canela", "dulce-tonka", "cítrico-lima" y "picante-clavo", y en donde dicha composición comprende:
- uno o más ingredientes de perfume que tienen un atributo de olor "cítrico-naranja" en una concentración de 0.1 a 25% en peso; y
 - uno o más ingredientes de perfume que tienen un atributo de olor a "cítrico-lima" en una concentración de 0.05 a 5% en peso; y
 - uno o más ingredientes de perfume que tienen un atributo de olor "cítrico-mandarina" en una concentración de 0.05 a 5% en peso; y
 - uno o más ingredientes de perfume que tienen un atributo de olor "dulce-tonka" en una concentración de 0.05 a 1% en peso; y
 - uno o más ingredientes de perfume que tienen un atributo de olor a "afrutado-fruta confitada" en una concentración de 0.01 a 1% en peso; y
 - uno o más ingredientes de perfume que tienen un atributo de olor de "floral-flor de naranja" en una concentración de 0.01 a 1% en peso; y
 - uno o más ingredientes de perfume que tienen un atributo de olor de "floral-naranja medicinal" en una concentración de 0.01 a 1.0% en peso; y
 - uno o más ingredientes de perfume que tienen un atributo de olor a "picante-clavo" en una concentración de 0.005 a 0.7% en peso; y
 - uno o más ingredientes de perfume que tienen un atributo de olor "animálico-fecal" en una concentración de 0.005 a 0.07% en peso; y
 - uno o más ingredientes de perfume que tienen un atributo de olor a "picante-canela" en una concentración de 0.0001 a 0.05% en peso.

5. La composición de perfume de conformidad con la reivindicación 4, caracterizada porque comprende:
- uno o más ingredientes de perfume que tienen un atributo de olor "cítrico-naranja", seleccionados del grupo que consiste en aceites de naranja y reconstituciones de naranja, tales como aceite crudo de naranja de Brasil, aceite de toronja, aceite de naranja, aceite amargo de naranja, aceite de sangre de naranja; aceite de naranja incoloro, aceite de naranja concentrado, esencia de naranja, terpenos de naranja, aceite de fase bigarada, aceite de tangelo, carbonilos y aldehídos de naranja natural y mezclas de los mismos; y/o
 - uno o más ingredientes de perfume que tienen un atributo de olor "cítrico-lima", seleccionados del grupo que consiste en cimeno para (4-metil-1-isopropilbenceno), aceite de cedrat, citratal R (1,1-dietoxi-3,7-dimetilocta-2,6-dieno),

delta-3-careno (3,7,7-trimetilbicyclo[4.1.0]hept-3-eno), dipenteno (1-metil-4-(prop-1-en-2-il)ciclohex-1-eno), aceite de elemi, resinoide de elemi al 50% en benzoato de bencilo, aceite de fase verde de limón, dienos de lima, aceite de lima destilado, aceite lima exprimido, óxido de lima, reconstitución de terpenos de lima, ocimeno ((E)-3,7-dimetilocta-1,3,6-trieno), terpineno alfa (1-metil-4-propan-2-ilciclohexa-1,3-dieno), terpineno gamma (1-metil-4-propan-2-ilciclohexa-1,4-dieno), terpineol (2-(4-metil-3-ciclohexen-1-il)-2-propanol) y terpinoleno (1-metil-4-propan-2-ilidenciclohexeno) y mezclas de los mismos; y/o

- uno o más ingredientes de perfume que tienen un atributo de olor "cítrico-mandarina", seleccionados del grupo que consiste en aceite clementina, antranilato de dimetilo (2-metilaminobenzoato de metilo), aceite de mandarina, aceite de madarina incoloro, aceite verde de mandarina, aceite amarillo de mandarina, aceite de fase de mandarina, aceite de tamarindo, reconstituciones de tamarindo, aceite de tangerina, reconstitución de tangerina, tangerinol (acetato de (E)-6,10-dimetilundeca-5,9-dien-2-ilo) y mezclas de los mismos; y/o

- uno o más ingredientes de perfume que tienen un atributo de olor "dulce-tonka", seleccionados del grupo que consiste en bicyclo nonalactona (3,4,4a,5,6,7,8,8a-octahidrocromen-2-ona), cumarina (cromen-2-ona) y tolil aldehído para (4-metilbenzalaldehído), reconstitución de cumarina, aceite de flouve, reconstitución de flouve, aceite de heno, heno absoluto, koumalactona (3,6-dimetil-3a,4,5,6,7,7a-hexahidro-3H-benzofuran-2-ona), absoluto de malvavisco, absoluto de mate, reconstitución de mate, metil-octalactona (5-butil-4-metiloxolan-2-ona), toncarosa (3-(2-hidroxifenil)acrilato de (E)-dec-9-en-1-ilo), absoluto de ajonjolí tostado, absoluto de hoja de tabaco, absoluto de tonka, absoluto de tonka incoloro, aceite de haba tonka, acetanisol (1-(4-metoxifenil)etanona), acetofenona extra (1-feniletanona), aldehído anísico (4-metoxibenzaldehído), alcohol anisílico ((4-metoxifenil)metanol), aubepina paracresol (4-metoxibenzaldehído), cristales de dimetil-hidroquinona (1,4-dimetoxibenceno), cristales de heliotropina (benzo[d][1,3]dioxol-5-carbaldehído), aldehído hidratrópico (2-fenilpropanal), metil-acetofenona (1-(p-tolil) etanona), mimosa absoluta, veratril aldehído (3,4-dimetoxibenzaldehído) y mezclas de los mismos; y/o

- comprende uno o más ingredientes de perfume que tienen un atributo de olor "afrutado-fruta confitada", seleccionado del grupo que consiste de cristalon (2,6,6-trimetilciclohexa-1,3-dieno-1-carboxilato de etilo), givescona (2-etil-6,6-dimetilciclohex-2-eno-1-carboxilato de etilo), damascenona ((E)-1-(2,6,6-trimetilciclohexa-1,3-dien-1-il) but-2-en-1-ona), damascona alfa ((E)-1-(2,6,6-trimetil-1-ciclohex-2-enil)but-2-en-1-ona), damascona beta ((E)-1-(2,6,6-trimetil-1-ciclohexenil)but-2-en-1-ona), damascona delta (1-(2,6,6-trimetil-1-ciclohex-3-enil)but-2-en-1-ona, y mezclas de los mismos; y/o

uno o más ingredientes de perfume que tienen un atributo de olor "flor de naranja floral", seleccionados del grupo que consiste en reconstituciones de flor de

naranja, antranilato de metilo (2-aminobenzoato de metilo), cristales de naranja (1-naftalen-2-iletanona), 1asm en sambac aceite y mezclas de los mismos; y/o

uno o más ingredientes de perfume que tienen un atributo de olor "floral-medicinal", seleccionados del grupo que consiste en yara samba (2-metoxinaftaleno), cresil metil éter para (1-metoxi-4-metilbenceno), etil benzoato, etil salicilato, metil reconstituciones de benzoato, salicilato de m etilo, flores de tubérculo y mezclas de los mismos; y/o

uno o más ingredientes de perfume que tienen un atributo de olor a "clavo picante", seleccionados del grupo que consiste en acetato de eugenilo ((2-metoxi-4-prop-2-enilfenil) acetato), acetil isoeugenol (2-metoxi-4-prop acetato de l-en-2-ilfenol), aceite de hoja de clavo crudo, incoloro y rectificado, dihidroeugenol (2-metoxi-4-propilfenol), eugenol (2-metoxi-4- prop-2-enilfenol) e isoeugenol (2-metoxi-4-prop-1-en-2-ilfenol) y mezclas de los mismos; y/o

uno o más ingredientes de perfume que tienen un atributo de olor "animal-fecal", seleccionados del grupo que consiste en indol e indoleno (8,8-bis (1H-indol-3-il) -2,6-dimetiloctan-2-ol), indoflor (4,4a,5,9b-tetrahidroindeno [1,2-d] [1,3] dioxina) y mezclas de los mismos; y/o

uno o más ingredientes de perfume que tienen un atributo de olor a "canela picante", seleccionados del grupo que consiste en aldehído cinámico (3-fenilprop-2-enal), cinamalva ((E)-3-fenilprop-2-enenitrilo), aceite de corteza de canela; aldehído m etil cinámico ((z) -2-metil-3-fenilacrilaldehído), y mezclas de los mismos.

6. La composición de perfume de conformidad con cualquiera de las reivindicaciones 4 o 5, caracterizado porque comprende indol en combinación con al menos cinco, más particularmente al menos seis ingredientes de perfume seleccionados del grupo que consiste en citronelol (3,7-dimetiloct-6-en-1 -ol), decalactona gamma (5-hexiloxolan-2-ona), gardenol (acetato de 1-feniletilo), hexenol-3-cis ((z) -hex-3-en-1-ol), ionona beta (4- (2,6,6-trimetilciclohexen-1-il) but-3-en-2-ona), linalol (3,7-dimetilocta-1,6-dien-3-ol), acetato de linalilo (3,7- acetato de dimetilocta-1,6-dien-3-ol) y melocotón puro (5-heptiloxolan-2-ona); o al menos cinco ingredientes de perfume seleccionados del grupo que consiste en citronelol (5-heptiloxolan-2-ona), brasilato de etileno (1,4-dioxacicloheptadecano-5,17-diona), acetato de bencilo, hediona (3-oxo-2-pentilciclopentanoacetato de metilo), linalol (3,7-dimetilocta-1,6-dien-3-ol), iso e super (1-(2,3,8,8-tetrametil-1,3, 4,5,6,7-hexahidronaftalen-2-il) etanona), alcohol feniletílico, etil vainillina y vainillina.

7. La composición de perfume de conformidad con cualquiera de las reivindicaciones 4 a 6, caracterizado porque comprende damascenona en combinación con al menos cinco ingredientes de perfume seleccionados del grupo que consiste en CITRONELOL (3,7-dimetiloct-6-en-1 -ol), gardenol (acetato de 1-feniletilo), acetato de

P-2021/39308 (NC2021/0017697)

Reivindicaciones en respuesta a Oficio No. 29

19 de mayo de 2025

hexenil-3-cis ((z) -hex-3-en-1-ol), ionona beta ((4- (2,6,6-trimetilciclohexen-1-il) but-3-en-2-ona), linalol (3,7-dimetilocta-1, 6-dien-3-ol), acetato de linalilo (3,7-dimetilocta-1, 6-dien-3-ol acetato) y melocotón puro (5-heptiloxolan-2-ona).

8. Un producto de consumo, caracterizado porque comprende la composición de perfume de conformidad con cualquiera de las reivindicaciones 4 a 7 y una base adecuada.

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[The Good Scents Company Information Listings](#)

[To Odor Index](#) or [To Flavor Descriptor](#)

Odor Descriptors for citrus

Primary (First) - citrus

FR

aldehydic nitrile

odor: citrus aldehydic lemon fatty metallic

FR

aldenal C-10

odor: fresh citrus waxy aldehydic

backhousia citriodora f. muell. leaf oil

odor: clean fresh lemon

FL/
FR

bergamot essence

odor: bergamot

flavor: bergamot

FL/
FR

bergamot oil

odor: citrus woody orange linalyl acetate

flavor: bergamot

FL/
FR

bergamot oil bergaptene reduced italy

odor: citrus floral woody orange linalyl acetate

flavor: Citrus,floral, rosy, green, lemon and fatty with a ginger and lime nuance

FL/
FR

bergamot oil decolorized

odor: bergamot

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flavor: citrus bergamot

FL/
FR

bergamot oil turkey

odor: citrus woody orange linalyl acetate

flavor: bergamot

FR

bergamot specialty

odor: bergamot

FL/
FR

beta-bisabolol

odor: citrus floral tangy lemon fresh sweet herbal

FL/
FR

delta-3-carene

odor: citrus terpenic herbal pine solvent resinous phenolic cypress medicinal woody

flavor: citrus pine terpenic herbal resinous tropical peppery juniper wasabi

FL/
FR

cedrat peel oil

odor: fresh citrus lemon

FR

cedrat specialty

odor: citrus cedrat zesty lemon bergamot

FL/
FR

(E)-citral

odor: citrus lemon

flavor: citrus lemon

FL/
FR

(Z)-citral

odor: sweet citral lemon peel

flavor: lemon

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FL/
FR

citral glyceryl acetal

FL/
FR

citral propylene glycol acetal

odor: sweet citrus lemon orange

FL/
FR

citronella oil ceylon

odor: citrus lemony grassy woody rose fresh wet leaves weedy

flavor: citrus lemon fatty woody grassy terpenic tropical dewy

FR

citronella oil ceylon replacer

FR

citronella oil china

odor: citrus

flavor: citronella

FR

citronella oil java

odor: fresh sweet citrus powdery geraniol weedy green dewy tomato woody

flavor: citrus aldehydic citrus peel floral green terpenic lemon weedy

FR

citronella oil java replacer

odor: fresh sweet citrus powdery geraniol weedy green dewy tomato woody

FR

citronella oil terpenes

odor: citrus citronella

FR

citronella oil zimbabwe

odor: citrus citronella

FR

citronellal / methyl anthranilate schiff's base

odor: fresh citrus weedy grassy sharp woody

FR

citronellal oxime

odor: citrus bergamot lime

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[T](#)

odor: citrus lime dirty aldehydic

FR

citronellyl nitrile

odor: fresh lemon metallic citrus waxy floral

FR

(R)-citronellyl nitrile

odor: citrus green fruity floral

FR

citronitrile (Symrise)

odor: citrus lemongrass fruity floral rose cinnamon balsamic

FR

citrus aurantifolia swingle fruit extract

odor: lime

flavor: lime

FL/
FR

citrus aurantifolia swingle peel extract

odor: lime

flavor: lime

FL/
FR

citrus aurantium bergamia fruit extract

odor: bergamot

FR

citrus basil fragrance

FR

citrus bergamot fragrance

FR

citrus carbaldehyde

odor: citrus greasy aldehydic floral marine

FR

citrus carbaldehyde / methyl anthranilate schiff's base

odor: fresh green clean citrus fruity hyacinth

FR

citrus floral fragrance

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FL/
FR

[citrus grandis fruit extract](#)

odor: grapefruit
flavor: grapefruit

FR

[citrus grandis fruit water](#)

odor: grapefruit

FR

[citrus grandis peel extract](#)

odor: grapefruit

FL/
FR

[citrus grandis peel oil](#)

odor: grapefruit
flavor: grapefruit

FL/
FR

[citrus grandis peel powder](#)

odor: grapefruit peel

FR

[citrus green fragrance](#)

FR

[citrus herbal fragrance](#)

FL/
FR

[citrus hystrix fruit extract](#)

odor: lime
flavor: lime

FR

[citrus hystrix leaf extract](#)

odor: petitgrain citrus

FR

[citrus limon leaf extract](#)

odor: petitgrain citrus

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**FL/
FR**

citrus limon extract

odor: lemon

flavor: lemon

FR

citrus limon flower/leaf/stem extract

odor: lemon

FR

citrus limon flower/leaf/stem oil

odor: petitgrain citrus

**FL/
FR**

citrus limon fruit extract

odor: lemon

flavor: lemon

**FL/
FR**

citrus limon fruit oil

odor: lemon

flavor: lemon

**FL/
FR**

citrus limon fruit water

odor: lemon

flavor: lemon

**FL/
FR**

citrus limon juice extract

odor: lemon

flavor: lemon

**FL/
FR**

citrus limon juice powder

odor: lemon

FL/

citrus limon peel oil c.p. florida

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FR

odor: fresh lemon peel sweet citrus aldehydic
flavor: citrus lemon

FL/
FR

citrus limon peel tincture

odor: lemon
flavor: lemon

FR

citrus linen fragrance

FR

citrus mint fragrance

FR

(E)-citrus nitrile

odor: citric citralva citral lemon

FL/
FR

citrus nobilis fruit extract

odor: mandarin

FL/
FR

citrus nobilis peel extract

odor: mandarin
flavor: mandarin

FL/
FR

citrus paradisi peel oil bergaptene reduced

odor: sweet dry citrus grapefruit
flavor: grapefruit

FL/
FR

citrus paradisi peel oil washed

odor: sweet dry citrus grapefruit
flavor: grapefruit

FL/
FR

citrus paradisi peel water

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odor: floral citrus mandarin orange
flavor: mandarin

FL/
FR

citrus reticulata blanco var. tangerine oil

odor: citrus orange aldehydic peely terpenic mandarin
flavor: citrus fruity aldehydic peely orange mandarin terpenic

FR

citrus rose fragrance

FR

citrus sage fragrance

FL/
FR

citrus sinensis peel extract

odor: orange
flavor: orange

FL/
FR

citrus sinensis valencia peel extract

odor: orange
flavor: orange

FR

citrus specialty

odor: citrus

FL/
FR

citrus spp. peels extract

odor: citrus citrus peel
flavor: citrus citrus peel

FL/
FR

citrus tangerina extract

odor: tangerine
flavor: tangerine

FL/
FR

citrus tangerina fruit water

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B

T

odor: tangerine
flavor: tangerine

**FL/
FR**

citrus unshiu peel oil

odor: mandarin tangerine

FR

citrus vanilla fragrance

FR

citrus woody floral fragrance

FR

citrus woody fragrance

**FL/
FR**

combava peel oil

odor: lime
flavor: lime

FL

beta-cubebene

odor: citrus fruity radish

**FL/
FR**

curacao peel oil

odor: fresh grape citrus peel

FR

curacao specialty

odor: aldehydic citrus orange floral terpenic

2-cyclohexyl-4-methyl-1,3-oxathiane

odor: citrus, onion, herbaceous, dry wood slight tropical, slight onion

FR

cymbopogon citratus dc. stapf. oil cuba

**FL/
FR**

cymbopogon citratus extract

odor: lemongrass
flavor: lemongrass

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FL/
FR

cymbopogon flexuosus herb extract

odor: lemongrass

flavor: lemongrass

FL/
FR

cymbopogon flexuosus herb oil

odor: lemongrass

flavor: lemongrass

FR

cymbopogon martini motia herb extract

odor: lemongrass

FR

daisy fragrance

FL/
FR

4,7-decadienal

odor: citrus aldehydic tangerine

FL/
FR

(Z)-4-decenal

odor: citrus aldehydic orange watery cardamom

flavor: zesty citrus peel herbal fresh fatty fruity floral watery aldehydic

FR

(Z)-7-decenal

odor: citrus aldehydic cucumber

FR

iso decyl acetate

odor: fresh citrus green herbal cumin powdery clean

FR

dihydromyrcenyl acetate

odor: citrus bergamot lime lavender

FL

dihydronootkatone

odor: citrus fruit grapefruit

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B

T

odor: citrus herbal terpene camphor
flavor: herbal citrus aromatic terpenic pine minty woody tropical

FR **dodecane nitrile**
odor: dry citrus orange peel metallic spicy

FR **dragons blood fragrance**

FL **epoxy-2-decenal**
odor: citrus metallic green aldehydic

FL **2,3-epoxyheptanal**
odor: citrus fatty green

FL **2,3-epoxyoctanal**
odor: citrus fatty fruity soapy

FL/FR **2-ethyl-1-hexanol**
odor: citrus fresh floral oily sweet
flavor: sweet fatty fruity

trans-2-ethylidene-cis-3-hexenal

CS **geranyl nitrile**
odor: citrus lemon nitrile aldehydic metallic

FR **homo geranyl nitrile**
odor: lemon cologne metallic

FL/FR **ginger root oil cochin**
odor: citrus spicy terpenic herbal woody
flavor: spicy citrus aromatic terpenic floral oily woody

FR **grapefruit acetal**

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avor: grapefruit

FL/
FR

grapefruit essence

odor: grapefruit

flavor: grapefruit

FR

grapefruit fragrance

FR

grapefruit indene

odor: fresh citrus grapefruit skin rhubarb vetiver floral gardenia

(S)-grapefruit mercaptan

odor: grapefruit

FR

grapefruit nitrile

odor: citrus gardenia grapefruit burnt autumn leaves vetiver

grapefruit oil c.p. (citrus paradisi var. duncan) ital y

odor: sweet fresh dry citrus grapefruit

grapefruit oil c.p. (citrus paradisi var. duncan) russ ia

odor: sweet fresh dry citrus grapefruit

grapefruit oil c.p. (citrus paradisi var. falvedo)

odor: sweet fresh dry citrus grapefruit

grapefruit oil c.p. (citrus paradisi var. foster) russi a

odor: sweet fresh dry citrus grapefruit

grapefruit oil c.p. (citrus paradisi var. jubilee) russi a

odor: sweet fresh dry citrus grapefruit

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grapefruit oil c.p. (citrus paradisi var. marshall sea- less) russia

odor: sweet fresh dry citrus grapefruit

grapefruit oil c.p. (citrus paradisi var. red blush)

odor: sweet fresh dry citrus grapefruit

FL/
FR

grapefruit oil c.p. argentina

odor: sweet fresh dry citrus grapefruit

flavor: grapefruit

FL/
FR

grapefruit oil c.p. california

odor: sweet dry citrus bitter aldehydic terpenic fruity tropical orange

flavor: citrus terpenic aldehydic bitter orange powdery tropical

FL/
FR

grapefruit oil c.p. florida

odor: sweet fresh dry citrus grapefruit

flavor: grapefruit

FL/
FR

grapefruit oil c.p. israel

odor: citrus grapefruit peel

flavor: grapefruit

FL/
FR

grapefruit oil CO2 extract (citrus paradisi macf. va r. falvedo)

odor: sweet fresh dry citrus grapefruit

flavor: grapefruit

FL/
FR

grapefruit oil folded

odor: citrus grapefruit

flavor: grapefruit

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FL/
FR

grapefruit oil folded florida

odor: sweet dry grapefruit terpenic

flavor: grapefruit

FL/
FR

grapefruit oil replacer

odor: grapefruit

flavor: grapefruit

FL

grapefruit oil sesquiterpeneless

odor: grapefruit

flavor: grapefruit

FL/
FR

grapefruit oil terpeneless

odor: dry earthy grapefruit

flavor: grapefruit

FR

grapefruit specialty

odor: grapefruit

jambu flower oil brazil

odor: citrus herbal floral

FL/
FR

jambu oleoresin

odor: Citrus, herbal, lifting, tropical with a musty coolingness

flavor: Strangely effervescent, cooling, salty, slightly astringent and numbing

FR

lemon absolute replacer

odor: strong lemon

FR

lemon balm fragrance

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FL/
FR

lemon essence (water phase)

odor: lemon

flavor: lemon

FR

lemon fragrance

FL/
FR

lemon oil

odor: citrus lemon

flavor: citrus lemon

FL/citral-les
FR

s lemon oil

odor: citrus lemon

flavor: citrus lemon

FL/
FR

lemon oil c.p. africa

odor: citrus lemon

flavor: citrus lemon

FL/
FR

lemon oil c.p. argentina

odor: fresh citrus lemon aldehydic

flavor: citrus lemon

FL/
FR

lemon oil c.p. brazil

odor: lemon peel

flavor: citrus lemon

FL/
FR

lemon oil c.p. california

odor: fresh citrus lemon peel sweet aldehydic terpenic aromatic tart spicy candy

flavor: citrus lemon aldehydic terpenic tart aromatic sour

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FL/
FR

meyer **lemon oil cold pressed**

odor: fresh lemon lemon peel sweet citrus aldehydic terpenic aromatic tart spicy
candy

flavor: citrus lemon lemon peel aldehydic terpenic tart sour fatty

FL/
FR

lemon oil decolorized

odor: fresh lemon

flavor: lemon

FL/
FR

lemon oil distilled

odor: fresh lemon peel

flavor: lemon peel

FL/
FR

lemon oil folded

odor: sweet fresh citrus lemon peel

flavor: citrus lemon

FL/
FR

lemon oil folded argentina

odor: fresh lemon

flavor: citrus lemon

FL/
FR

lemon oil folded brazil

odor: fresh lemon

flavor: lemon

FL/
FR

lemon oil folded california

odor: sweet fresh citrus lemon peel

flavor: citrus lemon

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FL/
FR

lemon oil italy

odor: lemon

flavor: lemon

FR

lemon oil replacer

odor: fresh lemon

FL/
FR

lemon oil residues

odor: sweet fresh dry citrus grapefruit

FL

lemon oil sesquiterpeneless

odor: lemon

flavor: lemon

FL/
FR

lemon oil terpeneless

odor: fresh sweet citrus lemon aldehydic tart aromatic terpenic candy elemi

flavor: citrus lemon candy aldehydic aromatic terpenic lemongrass green

FL/
FR

lemon oil terpenes

odor: fresh lemon juicy

flavor: lemon

FL/
FR

lemon oil washed

odor: fresh lemon

flavor: lemon

FL/
FR

lemon specialty

odor: lemon

lemon verbena oil

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FR

[lemongrass fragrance](#)

FR

[lemongrass herb oil \(cymbopogon martini motia\)](#)

odor: lemongrass

FL/
FR

[lemongrass oil](#)

odor: fresh sweet lemon grassy green bois de rose tomato leaf

flavor: Green, citrus, lemon, floral, linalool, spice and chamomile-like

[lemongrass oil \(cymbopogon khasianus x c. pendulus\)](#)

odor: citrus lemongrass

[lemongrass oil \(cymbopogon pendulus praman\)](#)

odor: citrus lemongrass

FL/
FR

[lemongrass oil cameroon](#)

odor: citrus

flavor: lemongrass

FL/
FR

[lemongrass oil china](#)

odor: lemongrass

flavor: lemongrass

FL/
FR

[lemongrass oil egypt](#)

odor: citrus

flavor: lemongrass

FL/
FR

[lemongrass oil morocco](#)

odor: sweet lemon grassy fresh

flavor: lemongrass

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**FL/
FR**

odor: citrus
flavor: lemongrass

lemongrass oil yunnan

odor: citrus
flavor: lemongrass

FR

lime fragrance

**FL/
FR**

lime oil

odor: citrus lime
flavor: lime

**FL/
FR**

lime oil CO2 extract mexico

odor: citrus lime
flavor: lime

**FL/
FR**

lime oil distilled

odor: fresh lime sweet terpene
flavor: lime

**FL/
FR**

lime oil distilled africa

odor: lime
flavor: lime

**FL/
FR**

lime oil distilled folded

odor: fresh lime
flavor: lime

FL/

lime oil distilled haiti

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FR

odor: fresh lime sweet floral aldehydic terpene cologne tart woody
flavor: Lime, waxy, candy peely with a citral and terpy nuance

**FL/
FR**

lime oil distilled peru

odor: fresh sweet lime
flavor: lime

**FL/
FR**

lime oil distilled terpeneless

odor: distilled lime
flavor: lime

**FL/
FR**

lime oil distilled west indian

odor: lime
flavor: lime

**FL/
FR**

lime oil expressed

odor: fresh lime sweet terpenic
flavor: lime

**FL/
FR**

persian lime oil expressed

odor: citrus lime
flavor: lime

**FL/
FR**

lime oil expressed folded

odor: fresh lime
flavor: lime

**FL/
FR**

lime oil expressed furanocoumarin reduced

odor: fresh lime sweet terpenic

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avor: lime

FL/
FR

lime oil expressed terpeneless

odor: fresh sweet lime

flavor: lime

FL/
FR

lime oil furocoumarin reduced

odor: lime

flavor: lime

FR

lime oil replacer

odor: lime terpenic

FL/
FR

lime peel oil expressed mexico

odor: lime

flavor: lime

FL/
FR

lime peel water

odor: lime

flavor: lime

FR

lime pyran

odor: citrus saffron green lime terpene

flavor: Candy sweet, citrus lime and lemon, with a woody tropical longan type nuances

FR

lime specialty

odor: citrus lime

FL/
FR

dextro-limonene

odor: citrus orange fresh sweet

flavor: Sweet, orange, citrus and terpy

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odor: fresh clean citrus minty spearmint herbal

limonia acidissima fruit extract

odor: lemon

**FL/
FR**

linalool

odor: citrus floral sweet bois de rose woody green blueberry

flavor: Citrus, orange, lemon, floral, waxy, aldehydic and woody

**FL/
FR**

(Z)-linalool oxide (pyranoid)

odor: citrus green

**FL/
FR**

linalyl formate

odor: citrus herbal bergamot lavender soapy fatty green woody

flavor: citrus green herbal bergamot lavender nasturtium rooty floral tropical

**FL/
FR**

linalyl isovalerate

odor: citrus bergamot lavender peach apricot sage

flavor: sweet fruity apple plum peach

**FL/
FR**

litsea cubeba fruit oil

odor: sweet fresh lemon citral green grassy

flavor: citrus lemon lemongrass aldehydic waxy fruity grassy

**FL/
FR**

litsea cubeba oil terpeneless

odor: sweet lemon citral

flavor: lemon

**FL/
FR**

mandarin essence

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FL/
FR

mandarin oil

odor: citrus floral mandarin orange
flavor: mandarin

FL/
FR

mandarin oil (citrus reticulata blanco var. mandarin) japan

odor: mandarin
flavor: mandarin

FL/
FR

mandarin oil (citrus reticulata nova var. mandarin) uruguay

odor: mandarin
flavor: mandarin

FL/
FR

mandarin oil (citrus reticulata var. ponkan)

odor: mandarin
flavor: mandarin

FL/
FR

mandarin oil argentina

odor: fresh orange mandarin
flavor: mandarin

mandarin oil avana

odor: mandarin
flavor: mandarin

FL/
FR

mandarin oil decolorized

odor: floral citrus mandarin orange
flavor: mandarin

FL/clementine
FR ne

mandarin oil decolorized

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odor: mandarin

flavor: mandarin

FL/ clementi
FR ne

mandarin oil folded

odor: mandarin

flavor: mandarin

FL/
FR

mandarin oil italy

odor: floral citrus mandarin orange

flavor: mandarin

FR

mandarin oil replacer

odor: mandarin

FL/ terpenel
FR ess

mandarin oil

odor: dimethyl anthranilate mandarin

flavor: mandarin

FL/ clementi
FR ne

mandarin oil terpenes

odor: mandarin

flavor: mandarin

FR

king mandarin orange peel oil expressed

odor: mandarin

FL/ clementi
FR ne

mandarin peel oil

odor: mandarin

flavor: mandarin

FR

mandarin specialty

odor: powerful fresh citrus aldehydic mandarin

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odor: melissa citrus citronella

FR

melissa oil replacer

odor: melissa

melissa oil slovak republic

odor: sweet citrus citronella java herbal

FR

citrus melon fragrance

FL

(Z+E)- mercapto-para-menthan-3-one

FL

3- mercaptooctanal

odor: citrus fruity peely grapefruit green

3-(methallylthio)-2,6-dimethyl-4-heptanone

3- methyl cyclohexene

FL/

FR

methyl heptenone

odor: citrus green musty lemongrass apple

flavor: Green, vegetative, musty, apple, banana and green bean-like

FR

3- methyl-4-(2-methyl butyl oxy) butyraldehyde

odor: citrus, floral citronellal, and green notes

4- methyl-2-(1-methyl propyl)-1,3-oxathiane

odor: citrus, pamplemousse, grapefruit, lime, zesty vegetable, green, sulfury

FL/

FR

8- methylnonanal

odor: citrus floral green waxy milky

FR

citrus musk fragrance

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FR

myrmac aldehyde

odor: citrus ozone aldehydic grapefruit muguet

FL/
FR

nerol

odor: sweet natural neroli citrus magnolia

flavor: lemon, bitter, green and fruity with a terpy nuance

FL/
FR

neroli oil tunisia

odor: citrus neroli

flavor: neroli

FL/
FR

nonanal dimethyl acetal

odor: fresh floral plastic citrus green

flavor: green plastic waxy cilantro nasturtium tomato leaf cortex

FL/
FR

ocimene quintoxide

odor: sweet citrus herbal green celery spicy minty woody

flavor: Green, woody, terpy, citrus, lime, with a fresh and cooling nuance

FL/
FR

ocimenol

odor: fresh citrus lemon lime cologne sweet mace

FL/
FR

octanal dimethyl acetal

odor: citrus floral green leafy rose violet

flavor: green cilantro nasturtium citrus peel privet

FR

octanal glycol acetal

odor: fresh citrus orange aldehydic fatty

FL/

orange essence oil

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FR

odor: sweet orange

flavor: orange

FL/
FR

orange extract

odor: orange

flavor: orange

FR

orange fragrance

FL/
FR

orange fruit oil

odor: natural fresh sweet citrus pressed oranges aldehydic

flavor: orange

FL/
FR

sweet orange infusions

odor: orange

flavor: orange

FL/
FR

blood orange oil italy

odor: sweet orange citrus aldehydic terpenic tangerine pulpy

flavor: sweet juicy citrus orange fruity pulpy tangerine aldehydic

FL/
FR

blood orange oil (citrus sinensis var. tarocco) italy

odor: sweet orange aldehydic tangerine citrus

flavor: juicy orange tangerine tangelo aldehydic

FR

orange oil replacer

odor: citrus juicy fruity aldehydic terpenic peely aromatic

FL/
FR

bitter orange peel oil

odor: citrus orange dry terpenic aldehydic woody fresh leaf

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avor: orange

sweet **orange peel oil c.p. (citrus sinensis var. biondo comune) blond italy**

odor: citrus orange

flavor: orange

sweet **orange peel oil c.p. (citrus sinensis var. navelina) blond italy**

odor: citrus orange

flavor: orange

sweet **orange peel oil c.p. (citrus sinensis var. ovale) blond italy**

odor: citrus orange

flavor: orange

sweet **orange peel oil c.p. (citrus sinensis var. valencia late) blond italy**

flavor: orange

sweet **orange peel oil c.p. (citrus sinensis var. washington navel) blond italy**

odor: citrus orange

flavor: orange

**FL/
FR**

sweet **orange peel oil c.p. brazil**

odor: orange fresh citrus juicy fruity aldehydic terpenic peely aromatic sweet

flavor: orange

**FL/
FR**

sweet **orange peel oil c.p. china**

odor: fresh orange peel

flavor: orange

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FL/
FR

sweet [orange peel oil c.p. french guinea](#)

odor: citrus orange

flavor: orange

FL/
FR

sweet [orange peel oil c.p. italy](#)

odor: citrus orange

flavor: orange

FL/
FR

sweet [orange peel oil c.p. spain](#)

odor: citrus orange

flavor: orange

FL/
FR

sweet [orange peel oil c.p. temple florida](#)

odor: fresh orange peel

flavor: orange

FL/
FR

sweet [orange peel oil c.p. valencia](#)

odor: orange fresh juicy sweet

flavor: orange

FL/
FR

sweet [orange peel oil c.p. west indian](#)

odor: citrus orange

flavor: orange

FL/
FR

sweet [orange peel oil decolorized](#)

odor: citrus orange juicy

flavor: orange

FL/

sweet [orange peel oil distilled](#)

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odor: sweet fresh juicy tangy orange peel citrus

flavor: sweet juicy orange fresh peel

FL/
FR

sweet [orange peel oil folded brazil](#)

odor: orange peel

flavor: orange peel

FL/
FR

sweet [orange peel oil folded california](#)

odor: sweet fresh juicy tangy orange peel citrus

flavor: sweet juicy orange fresh peel

FL/
FR

sweet [orange peel oil folded florida](#)

odor: sweet fresh juicy tangy orange peel citrus

flavor: sweet juicy orange fresh peel

FL/
FR

sweet [orange peel oil folded israel](#)

odor: fresh orange

flavor: orange

FL/
FR

sweet [orange peel oil folded temple](#)

odor: fresh orange

flavor: orange

FL/
FR

bitter [orange peel oil italy](#)

odor: orange dry woody fresh leaf

flavor: bitter orange

FL/
FR

bitter [orange peel oil rectified \(furo coumarin reduced\)](#)

odor: fresh citrus bitter orange floral

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FL/
FR

bitter [orange peel oil terpeneless](#)

odor: Sweet, juicy, floral, aldehydic orange with woody citron nuances

flavor: Sweet, juicy, peely, with aldehydic and floral nuances

FL/
FR

sweet [orange peel oil terpeneless](#)

odor: citrus aldehydic orange peel zesty orange juicy citrus peel tart rhubarb

flavor: citrus aldehydic zesty orange peel citrus peel peely orange rind orange

FR

[orange specialty](#)

odor: citrus orange

FL/
FR

[petitgrain absolute france](#)

odor: petitgrain

flavor: petitgrain

FR

[petitgrain combava oil](#)

odor: fresh leafy sweet lemon petitgrain eucalyptus citriodora

FL/
FR

sweet [petitgrain oil](#)

odor: floral petitgrain

flavor: petitgrain

FR

[philodendron solimoesense specialty](#)

odor: citrus grapefruit woody

FR

[pinus halepensis branch/leaf oil](#)

odor: citrus lemon bergamot lime zesty vegetable

FD

[saccharomyces boulardii](#)

FL/
FR

alpha- [sinensal](#)

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FR

odor: citrus orange
flavor: sweet citrus tangerine mandarin orange fruity citrus peel terpenic

FR

tangerine fragrance

FL/
FR

tangerine oil america

odor: citrus orange aldehydic peely terpenic mandarin
flavor: citrus aldehydic fruity peely orange mandarin terpenic

FL/
FR

tangerine oil california

odor: citrus orange aldehydic peely terpenic mandarin
flavor: citrus aldehydic fruity peely orange mandarin terpenic tropical

FL/
FR

tangerine oil florida

odor: tangerine
flavor: tangerine

FL/
FR

tangerine oil folded

odor: citrus tangerine
flavor: tangerine

FL

tangerine oil sesquiterpeneless

odor: fresh tangerine
flavor: tangerine

FL/
FR

tangerine oil terpeneless

odor: sweet citrus tangerine juicy terpenic floral narcissus
flavor: citrus tangerine mandarin citrus peel aldehydic floral terpenic fatty

FL/
FR

tangerine oil terpenes

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FR	tea tree oil	odor: citrus spicy terpenic nutmeg pine flavor: terpenic spicy nutmeg cooling minty fatty
FR	tea tree oil replacer	odor: citrus spicy terpenic nutmeg pine
FR	terpineols	
FL/ FR	alpha-terpinyl methyl ether	odor: citrus grapefruit bergamot orangeflower vegetable celery spicy earthy flavor: woody celery earthy sweet spicy
FL/ FR	2-tetradecenal	odor: citrus waxy fatty green floral
FL/ FR	(Z)-8-tetradecenal	odor: citrus fruity floral orange peel fatty waxy green herbal beeswax
FR	tetrahydromyrcenol	odor: fresh sweet citrus lime floral lily
FR	tetrahydromyrcenyl acetate	odor: fresh citrus herbal mossy woody lavender
FL	thioterpenes	odor: citrus lime sulfurous
FL/ FR	(E,Z,Z)-2,4,7-tridecatrienal	odor: citrus peel waxy fatty oily fruity flavor: bitter waxy sweet

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FR 8-[trimethyl-7-nonen-2-ol](#)

odor: grapefruit citrus floral citronella

flavor: grapefruit

FL/ FR 10-[undecen-2-one](#)

odor: citrus fatty

FL [verbena oil france](#)

odor: citrus verbena lemon

flavor: verbena

FL [verbena oil morocco](#)

odor: verbena lemon

flavor: verbena

FR [verbena oil replacer](#)

odor: citrus lemon

FR [verbena specialty](#)

odor: verbena

FR [waxy nitrile](#)

odor: citrus waxy mandarin skin fresh aldehydic sea breeze

FR [yuzu fragrance](#)

FL/ FR [yuzu fruit oil](#)

odor: yuzu

flavor: yuzu

FL/ FR [yuzu fruit water](#)

odor: yuzu

flavor: yuzu

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odor: tany citrus

flavor: yuzu

FR

yuzu specialty

odor: citrus mandarin grapefruit

Secondary (Second) - citrus

FR

acetaldehyde citronellyl methyl acetal

odor: citrus natural lemon

FL/
FR

6-acetoxidyhydrotheaspirane

odor: powerful citrus herbal green tea tangerine grapefruit mango passion fruit

FL

acitral

agathis australis oil

odor: fresh lemony terpene

FR

agrestic specialty

odor: agrestic citrus floral herbal waxy

FR

aldenal C-9

odor: powerful fresh waxy citrus

FL/
FR

iso amyl 2-methyl butyrate

odor: Sweet, fruity, cherry, winey with blueberry and apple nuances

flavor: Sweet, creamy, fruity with apple, winey, cherry, raisin and berry nuances

FR

mountain ash berry fragrance

odor: herbal citrus tart bitter

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FR

bergamot oil italy

odor: citrus woody orange linalyl acetate

flavor: citrus bergamot

FL/
FR

bergamot oil ivory coast

odor: citrus woody orange linalyl acetate

flavor: bergamot

FR

bergamot oil replacer

odor: bergamot citrus floral spicy green orange peel lemon lime ginger

FL/
FR

bergamot oil terpeneless

odor: sweet citrus linalyl acetate

flavor: bergamot

FL/
FR

bisabolene

odor: balsamic citrus myrrh opoponax spicy

flavor: Citrus, woody, tropical, floral, fruity, astringent and green

bursera graveolens wood

odor: balsamic citrus fruity woody coumarinic

FL/
FR

bursera graveolens wood oil

odor: balsamic citrus fruity woody coumarinic

FL/
FR

iso butyl 2-methyl butyrate

odor: sweet fruity

flavor: fruity citrus melon

FL/
FR

citral diethyl acetal

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FR (R)-(+)-citronellal

odor: fresh herbal citrus

FR citrus ocimenol

odor: fresh sweet citrus lime floral lily

FR citrus ocimenol acetate

odor: herbal citrus weedy cologne woody

FL/FR citrus paradisi peel extract

odor: Grapefruit, aldehydic, citrus orange, a slight sulfurous topnote and a noot ketone dryout

flavor: Citrus, juicy grapefruit with a pulpy mouthfeel

FR citrus propanol

odor: fresh sweet clean citrus rose warm herbal

FR clary alcohol

odor: camphor citrus spicy

FL/FR para-cymene

odor: fresh citrus terpene woody spice

flavor: Terpy and rancid with slightly woody oxidized citrus notes. It has spice nuances of green pepper and oregano

FL 2,4-decadienal

odor: Fatty, oily, green, chicken skin-like

flavor: Fatty, oily, chicken, fried, with a slight rancid tallow nuance

FL 2,4,7-decatrienal

FL (E,E,Z)-2,4,7-decatrienal

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FR (Z)-4- **decenal diethyl acetal**

odor: bitter orange

FL **dehydronootkatone**

odor: fruity citrus grapefruit

flavor: grapefruit

FL/
FR **1,2-di((1-ethoxy)ethoxy) propane**

FL/
FR **6,7-dihydrolinalool**

odor: woody citrus camphoreous

FL/
FR **dihydromyrcenol**

odor: fresh citrus lime floral clean cologne weedy

flavor: green aldehydic herbal terpenic soapy lime tropical

FL/
FR **dihydroterpinyl acetate**

odor: pine citrus woody lime cologne

FL/ (E+Z)-4,
FR 8- **dimethyl-3,7-nonadien-2-yl acetate**

odor: lemon rind citrus earthy woody

FL/
FR **2-dodecanone**

odor: fruity citrus floral orange

flavor: fatty

FL/
FR **2-dodecenal**

odor: green citrus fruity mandarin orange herbal

flavor: fatty waxy citrus peel cilantro herbal

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	decylacetone	odor: fatty citrus aldehydic
FL/ FR	elemol	odor: spicy citrus woody resinous
FL	2,3-epoxydecanal	
FR	eucalyptus citriodora oil	odor: fresh rosy citronella balsamic floral
FL/ (E)-beta FR -	farnesene	odor: woody citrus herbal sweet
(Z)-beta -	farnesene	odor: citrus green
FR	gardenia amide	odor: fresh woody citrus oily natural cedar grapefruit
FL/ FR	geranic oxide	odor: fresh camphor herbal rosemary flavor: Sweet, camphoreous, woody, cooling, with floral nuances
FR	ginger fragrance	
FL/ FR	ginger root oil china	odor: spicy ginger citrus woody terpenic camphoreous earthy flavor: spicy citrus terpenic aldehydic floral aromatic tropical woody
FR	ginger root oil replacer	odor: fresh spice ginger root

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FL/
FR

grapefruit oil

odor: grapefruit
flavor: pulpy grapefruit

odor: sweet dry citrus bitter aldehydic terpenic fruity tropical orange
flavor: grapefruit

FR

guava leaf oil cuba

odor: watery citrus woody earthy herbal

FL **pseudoionone**

odor: sweet waxy citrus floral balsamic dry dusty powdery spicy
flavor: sweet floral grassy balsamic citrus waxy fatty spicy terpenic

FR

juniper berry oil terpenes

odor: pine citrus camphor woody juniper

kauri-copal leaf oil

odor: fresh lemony terpene

FL

lemon carbonyls

odor: lemon citrus lime grapefruit
flavor: lemon

FL/
FR

lemongrass oil terpenes

odor: citrus lemongrass terpene
flavor: lemongrass

FR

lime octadienal

odor: waxy citrus lime floral

FL/
FR

lime oil expressed florida

odor: fresh lime sweet terpenic coumarin

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FL/
FR

(R)- **limonene-10-ol**

FR

iso **longifolene epoxide**

odor: dry woody citrus linalyl and nopyl acetate

FR **clementi
ne**

mandarin fragrance

FR

mango citrus fragrance

FR

marine nitrile

odor: citrus marine earthy

FL

melissa oil

odor: sweet citrus citronella java herbal grassy

FL/
FR

melon heptenal propylene glycol acetal

FL/
FR

methyl acetoacetate

odor: fresh fruity citrus green

1-methyl cyclohexene

odor: lime citrus

FL/
FR

2-methyl decanal (aldehyde C-11 MOA)

odor: powerful fresh dry citrus waxy watery

flavor: citrus aldehydic fatty herbal waxy citrus rind soapy incense

FR

3-methyl-4-heptyl oxybutyraldehyde

odor: aldehydic, citrus, orange, tangy, juicy, and zesty notes

FL/
FR

1-methyl-4-methyl ethenyl cyclohexene sulfurized

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FL/FR (Z+E)-2-methyl-2-(4-methyl-3-pentenyl) cyclopropane carbaldehyde

odor: fruity citrus lemon

FR muguet nitrile

odor: citrus floral muguet lily sweet metallic

FL/FR nerolidyl acetate

odor: fresh sweet citrus waxy freesia woody

FL (E,E)-2,6-nonadienal

odor: fresh citrus green cucumber melon

flavor: Fresh green cucumber skin and watermelon with a fatty nuance

FL/FR (+)-nootkatone

odor: grapefruit peel citrus gardenia woody

flavor: Grapefruit, citrus, orange and bitter

FL/FR nopol

odor: sweet balsamic citrus pine herbal

FL/FR beta-ocimene

odor: Tropical, green, terpy and woody with vegetable nuances

flavor: Green, tropical, woody with floral and vegateble nuances

FR ocimen-1-yl acetate

odor: herbal citrus lavender cologne bergamot floral

FL/FR octanal diethyl acetal

odor: Green, citrus, oily and fatty with a woody, spicy and fruity nuance

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odor: fatty only sweet fatty

FR **oriental citrus fragrance**

**FL/
FR** **palmarosa oil**

odor: sweet floral citrus grassy citronella geranium metallic tomato leafy
flavor: sweet grassy weedy spicy herbal citronella citrus lemon verbena

FR **palmarosa oil replacer**

odor: sweet floral citrus grassy citronella geranium metallic tomato leafy

FR **pamplemousse specialty**

odor: grapefruit citrus black currant lemon mandarin

FL **panax quinquefolius root extract**

odor: linalool citrus fresh
flavor: earthy vegetable rooty astringent

**FL/
FR** **panax quinquefolius root tincture**

odor: linalool citrus fresh

FR **peony acetonitrile**

odor: floral geranium grapefruit fresh

**FL/
FR** **petitgrain bergamot oil**

odor: citrus petitgrain
flavor: petitgrain

FR **petitgrain concrete**

odor: petitgrain

FR **petitgrain heptane**

odor: herbal citrus licorice petitgrain animal costus

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FL/
FR

petitgrain oil terpeneless

odor: floral citrus peel clary sage sweet woody bitter

flavor: sweet citrus peel clary sage floral bergamot herbal citrus rind tropical woody

FL/
FR

beta-sinensal

odor: orange sweet fresh waxy juicy

FR

spicewood oil

odor: spicy citrus herbal green woody

flavor: peppery

FR

tangerine acetate

odor: green citrus iodine tangerine seaweed waxy fresh bitter

FR **oswego** **tea specialty**

odor: herbal citrus

FR **sesqui** **terpene fractions**

odor: orange peel

FL/
FR

terpinolene

odor: fresh woody sweet pine citrus

flavor: Woody, terpy, lemon and lime-like with a slight herbal and floral nuance

FL/
FR

(E)-2-tetradecenal

odor: waxy, slight green, soapy and fatty with cilantro and chicken like notes and nuances of cucumber, herbs and citrus lemon

flavor: Waxy, green, leafy vegetative with oxidized and reheated beef and chicken fat

FL/ (E)-2- **tridecenal**

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odor: lime citrus lemon herbal terpene

(S)-2,5,6-trimethyl-2-heptanol

odor: floral citrus dimethyl octanol soapy aldehydic

FR undecanal dimethyl acetal

odor: fresh floral citrus

FR (Z)-8-undecenal

odor: powerful aldehydic citrus waxy floral clean

FR verbena fragrance

FL/ FR verbena oil spain

odor: powerful fresh lemon herbal

flavor: verbena

FL/ FR verbena oil terpeneless

odor: fresh lemon citrus

flavor: verbena

Tertiary (Third) - citrus

FR abies amabilis oil canada

odor: fresh fir woody balsam citrus

FR acorus calamus rhizome oil

odor: fresh sweet herbal citrus spicy woody

agathis australis oleoresin

odor: fresh lemony terpene

FR agrumen aldehyde

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FR	aromatic woody citrus floral fragrance
FR	bergamot blossom fragrance
FR	bergamot vanilla specialty odor: bergamot vanilla
FL/ FR	alpha-bisabolol odor: mild floral peppery balsamic clean
FR	bois de rose fragrance
FL/ FR	bois de rose oil brazil odor: sweet floral linalool herbal citrus rose terpenic balsamic waxy woody flavor: bois de rose
FR	bois de rose oil replacer odor: sweet floral linalool herbal citrus rose terpenic balsamic waxy woody
FR	calamus oil replacer odor: calamus herbal citrus spicy woody
FL/ FR	cilantro herb oil egypt odor: Green, herbaceous, sweet, citrus-like with a woody aldehydic nuance flavor: Herbal, spice, green, aldehydic, with a sweet woody and waxy nuance
FL/ FR	(S)-(-)-citronellal odor: clean herbal citrus
FR	citronellyl ethyl ether odor: fresh clean rose citrus cologne floral
FL/	citronellyl oxyacetaldehyde

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FR

odor: coriander
flavor: coriander

FL/
FR

2,4-**decadien-1-ol**

odor: Fatty and waxy, white meat chicken and turkey with a slight melon fruity and dairy nuance
flavor: Strong fatty, chicken and lard-like, a rich fatty mouth feel with a faint fruity apple nuance

FL/ (E,E)-2,4
FR

-**decadien-1-ol**

odor: fatty waxy citrus melon fruity dairy
flavor: fatty oily waxy

FL/
FR

decanal dimethyl acetal

odor: waxy herbal citrus green neroli

FL/
FR

decanal methyl enol ether

odor: fruity floral citrus fatty

FL/
FR

3-**decanone**

odor: waxy fruity citrus orange floral green

FL/
FR

4-**decenal**

odor: aldehydic fatty citrus orange

FL/
FR

(Z)-4-**decenal**

odor: citrus aldehydic orange watery cardamom
flavor: zesty citrus peel herbal fresh fatty fruity floral watery aldehydic

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FL/
FR

(E)-2-decen-1-ol

odor: waxy fresh air citrus rose rummy rue

flavor: fresh fruity citrus rue fatty waxy woody brothy

FL

diethyl maleate

odor: fruity banana citrus

FR

dihydrocitronellyl ethyl ether

odor: fresh clean rose citrus green citronellyl acetate

FR

dihydromyrcene

odor: citronellol herbal citrus terpenic

FR

dihydroterpineol

odor: pine lime citrus floral terpenic

FL/
FR

(E)-2-dodecenal

odor: citrus metallic mandarin orange waxy aldehydic

flavor: waxy citrus peel aldehydic bitter orange mandarin cilantro fatty herbal

2-ethyl decanoic acid

odor: soapy waxy slight citrus slight woody

FR

ethyl (E)-4-octenoate

odor: fruity pear citrus

FR **douglasfir oil**

odor: fresh woody fir citric oily carrot seed balsam

FR **citrusfloral fragrance**

FR **gardenia acetal**

odor: fresh citrus gardenia green natural

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FL/
FR

ginger root oil

odor: spicy woody terpene warm ginger citrus

flavor: ginger

FR

hovenia specialty

odor: floral rose citrus neroli spicy petitgrain carnation lemon

FL/
FR

humulus lupulus extract

odor: woody green citrus malt tagette

flavor: hops

FL/
FR

3,6-ivy carbaldehyde

odor: green tart citrus herbal cortex aldehydic

flavor: green aldehydic herbal citrus rind grassy privet asparagus clover

FL/
FR

lemon hexadiene

odor: powerful lemon lime truffle

flavor: citrus lemon lime sulfurous

FL/
FR

linalyl propionate

odor: fresh bergamot lily woody rose rum

flavor: bergamot herbal floral woody citrus fruity

FR

mandarin lemon fragrance

FR

marine carbonitrile

odor: ozone citrus clean linen

FL/
FR

6-methyl-5-hepten-2-one propylene glycol acetal

odor: fatty green citrus

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odor: sweet woody violet citrus

FR 3- **methyl-4-(3-methyl-3-methoxybutyl oxy) butyraldehyde**

odor: aldehydic, fatty, and citrus notes

FR 1- **methyl-3-(2-methyl propyl) cyclohexanol**

odor: muguet citrus

methyl nerate

odor: floral herbal citrus fruity green geranium

FR 3- **methyl-4-octyl oxybutyraldehyde**

odor: aldehydic, fatty, and citrus notes

FR **alpha-methylene citronellal**

odor: petitgrain bergamot citrus fresh green woody

FL/
FR

myrcenol

odor: fresh floral lavender citrus

FR **neroli fragrance**

FL/
FR

neroli oil

odor: floral orangeblossom citrus petitgrain mandarin herbal

flavor: neroli

FL/
FR

neroli oil bigarde

odor: sweet floral orangeblossom citrus petitgrain mandarin herbal

flavor: Fresh, floral, citrus and green with a waxy and clean herbal nuance

FR **neroli oil replacer**

odor: sweet floral orangeflower citrus petitgrain mandarin herbal

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odor: floral green citrus woody waxy
flavor: green floral woody fruity citrus melon

**FL/
FR**

(E)-2-nonen-1-yl acetate

odor: fruity waxy citrus rind rue carrot seed oily earthy fatty
flavor: waxy rue oily fatty citrus rind artichoke carrot earthy

**FL/
FR**

octanal (aldehyde C-8)

odor: aldehydic waxy citrus orange peel green herbal fresh fatty
flavor: aldehydic green waxy fatty peely citrus orange

1,8-octane dinitrile

odor: fresh sweet waxy floral citrus mandarin

**FL/
FR**

blood orange oil (citrus sinensis var. sanguinello) italy

odor: sweet orange aldehydic tangerine citrus
flavor: juicy orange tangerine tangelo aldehydic

**FL/
FR**

sweet orange peel oil c.p. california

odor: orange fresh juicy sweet
flavor: orange

**FL/
FR**

sweet orange peel oil c.p. florida

odor: orange fresh juicy sweet
flavor: orange

**FL/
FR**

petitgrain lemon oil

odor: fresh sweet oily floral citrus lemon tomato woody bitter
flavor: citrus lemon lemongrass aldehydic tomato green citrus peel floral

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FR

pine oil 60

odor: fresh pine sweet dwarf pine

FR

pine oil 85

odor: herbal pine citrus woody green

FL/
FR

iso propyl isobutyrate

odor: pineapple sweet fruity citrus pear

FL/
FR

rose furan epoxide

odor: green earthy citrus

FL/
FR

sabinene

odor: Woody, spicy, citrus and terpy with green, oily and camphoreous nuances
flavor: Woody, spicy and camphoreous

FL/
FR

gamma-terpinene

odor: oily woody terpene lemon/lime tropical herbal
flavor: Terpy, citrus, lime-like, oily, green with a tropical fruity nuance

FL/
FR

terpinyl formate

odor: floral lavender citrus fruity cypress herbal woody
flavor: dry fruity herbal terpenic spicy woody green

FR

tetrahydrolinalyl acetate

odor: fresh woody bergamot citrus floral

FR

TMH aldehyde

odor: similar to nonanal but with a more modern, more floral and less citric note

FL/

2-tridecenal

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odor: strong green fruity tropical citrus tangerine passionfruit

FL/
FR

(E)-2-undecenal

odor: Aldehydic, waxy, citrus, with a fatty green nuance

flavor: Waxy, aldehydic, green, with a citrus and meaty nuance

Quaternary (Fourth) - citrus

FR

abies grandis oil canada

odor: fresh woody fir pear clean citric

agathis australis oil

odor: fresh lemony terpene

FR

cardamom liquid resin

odor: warm woody orange citrus balsam

FL/
FR

carvacryl methyl ether

odor: herbal spicy leafy citrus

FL/
FR

cubeb oil CO2 extract (piper cubeba)

odor: Spicy, terpy, woody and peppery with a citrus and herbal nuance

flavor: Spicy, terpy and peppery with a citrus and herbal nuance

FL

(E,E)-2,4-decadienal

odor: oily cucumber melon citrus pumpkin nut meat

flavor: Fatty, chicken, aldehydic, green, fried and potato

FL/
FR

decanal (aldehyde C-10)

odor: sweet aldehydic waxy orange peel citrus floral

flavor: Waxy, fatty, citrus and orange peel with a slight green melon nuance

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T

FR

decanoic acid

odor: unpleasant rancid sour fatty citrus

flavor: soapy waxy fruity

**FL/
FR**

decyl acetate

odor: waxy clean fresh laundered cloths citrus soapy

flavor: Waxy, soapy and fatty

**FL/
FR**

dihydrolinalool

odor: bois de rose woody citrus blueberry weedy

flavor: floral tropical bois de rose blueberry berry fruity herbal woody

FR

dipentene terpene hydrocarbon byproducts

odor: pine citrus herbal green

**FL/
FR**

dodecanal (aldehyde C-12 lauric)

odor: soapy waxy aldehydic citrus green floral

flavor: Soapy, waxy, citrus, orange mandarin

**FL/
FR**

elemi absolute

odor: green dill fresh terpene

flavor: elemi

**FL/
FR**

ethyl citronellate

odor: fruity dry dusty citrus sweet licorice rose spicy fennel

flavor: sweet dusty dry anise licorice fennel weedy

FR

freesia acetate

odor: fresh lily magnolia sweet citrus freesia green

FL/

freesia heptanol

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FR

odor: ginger earthy musty citrus

flavor: ginger

FL/
FR

ginger root oil brazil

odor: spicy woody terpene warm ginger citrus

flavor: ginger

FR

green carbaldehyde

odor: fresh green aldehydic metallic citrus adoxal profarnesal

FR

green carboxylate

odor: sweet fruity citrus green grape cumin

FL

2-heptyl cyclopropane carboxylic acid

odor: floral spicy herbal citrus

FR

cis-herbal cyclohexane

odor: fresh green herbal natural citrus woody

flavor: green herbal woody spicy floral chrysanthemum

FR

herbal heptane

odor: herbal green leaf citrus

FL (E,E)-2,4-**hexadienal**

odor: Green, fruity, aldehydic, citrus and waxy

flavor: Sweet, green, waxy, aldehydic with fresh melon nuances

kauri-copal leaf oil

odor: fresh lemony terpene

FR

kumquat specialty

odor: kumquat

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FL/
FR

methoxymelonal

odor: floral fruity watery citrus melon green

flavor: fruity juicy watery

FR

(2-methoxy-1-methyl butyl) benzene

odor: green, floral, grapefruit, citrus, fruity, fresh, khusinil, and spicy fragrance notes

FL/
FR

2-methyl undecanal (aldehyde C-12 mna)

odor: fresh amber aldehydic moss citrus tuberose metallic waxy coumarinic

flavor: Waxy, fatty, metallic, with citrus nuances

FR

methyl vetivate

odor: dry woody peppery citrus

FL/
FR

neroli oil morocco

odor: sweet fresh green petitgrain orangeflower citrus mandarin herbal

flavor: floral terpenic petitgrain aldehydic herbal tropical fruity

FL/
FR

nerolidol

odor: floral green waxy citrus woody

flavor: Green, floral, woody with fruity-citrus and melon nuances

FL/
FR

neryl acetate

odor: floral rose soapy citrus dewy pear

flavor: Floral, rosy, soapy, fruity, pear and tropical

FL/
FR

2-nonanol

odor: Waxy, green, creamy, citrus orange, cheesy with slight fruity undertones

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FL/ (E,E)-2,6
FR -allo **ocimene**

odor: terpene sweet fresh floral

FL/ (Z)-beta
FR - **ocimene**

odor: warm floral herb flower sweet

flavor: green tropical nasturtium metallic spicy floral woody

FL **3-octyl butyrate**

odor: fruity green herbal citrus musty

FR **papaya fragrance**

FR **papaya specialty**

odor: papaya floral fruity tropical citrus orange gooseberry cranberry cortex

FL/
FR **petitgrain oil**

odor: floral clary neroli citrus

flavor: petitgrain

FL/
FR **(E)-propyl 2-furan acrylate**

odor: Sweet, spicy, fruity and balsamic with a citrus-like nuance

flavor: Fruity, sweet, spicy, honey and tropical

FR **rhubafuran**

odor: green rhubarb grapefruit citrus herbal eucalyptus woody

FL/
FR **schinus terebinthifolius oil CO2 extract**

odor: woody peppery terpenic citrus spicy powdery green resinous

FL/
FR **alpha-terpineol**

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FR

odor: lilac floral terpenic

FL/
FR

terpinyl propionate

odor: herbal green old wood citrus geranium tropical

flavor: green woody citrus bergamot balsamic herbal fir needle

FL/
FR

tetrahydrocitral

odor: citrus lemon green aldehydic

FL/
FR

tetrahydrolinalool

odor: floral lily bois de rose woody lilac tea oily

flavor: Clean and fresh, floral, tea-like with citrus and herbal nuances

FR

(E)-2,5,9-trimethyl-4,9-decadien-1-al

odor: floral aldehydic powdery citrus fruity animal waxy sweet

FR

N-/i-undecanal

odor: fresh clean citrus waxy aldehydic clean laundry

FL/
FR

zanthoxylum piperitum fruit absolute CO2 extract

odor: spicy fresh allspice bay citrus mandarin bergamot oriental metallic

flavor: spicy allspice citrus bergamot tart zesty acetic bay warm

Quinary (Fifth) - citrus

FL/
FR

alpha-amyl cinnamaldehyde dimethyl acetal

odor: bland jasmin lily green lemon

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FL/
FR

4- **carvomenthenol**

odor: pepper woody earth musty sweet

flavor: cooling mentholic woody weedy earthy herbal spicy citrus

FL/
FR

cilantro leaf oil

odor: Green, fatty, aldehydic citrus-like, with brown herbal nuances

flavor: Citrus peely, aldehydic, fatty and waxy with green leafy nuances

FL/
FR

citronellal

odor: sweet dry floral herbal waxy aldehydic citrus

flavor: Floral, green, rosy and citrus lemon

FL/
FR

citronellol

odor: floral leather waxy rose bud citrus

flavor: Floral, rose, sweet, green with fruity citrus nuances

FL/
FR

citronellyl acetate

odor: floral green rose fruity citrus woody tropical fruit

flavor: Floral, waxy, aldehydic, with green fruity nuances. Fruity pear and apple like

FR

clary octenone

odor: sweet herbal clary sage bergamot petitgrain tropical citrus

FL/
FR

coriander oil fractions

odor: coriander marine

flavor: coriander

FR

4,8- **dimethyl-7-nonen-2-ol**

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flavor: fatty waxy citrus peach chicken skin

FL/
FR

geraniol

odor: sweet floral fruity rose waxy citrus

flavor: Floral, rosy, waxy and perfumey with a fruity, peach-like nuance

FR

(Z)-3-hexen-1-yl oxyacetaldehyde

odor: fresh watery ozone green waxy citrus aldehydic

FR

jonesia specialty

odor: floral lilac balsamic bois de rose citrus herbal neroli woody

FR

millefleurs fragrance

FR

muguet octadienol

odor: sweet floral fresh lily citrus

FL/
FR

(E)-2-nonenal

odor: Green, cucumber, aldehydic, fatty with a citrus nuance

flavor: Green, soapy, cucumber / melon-like with an aldehydic / fatty nuance

FL

2,4-octadienal

odor: Green, fatty, oily, citrus and melon-like

flavor: Green, fruity, melon, citrus, fatty and tallow nuances

FL/
FR

petitgrain absolute morocco

odor: petitgrain floral orangeflower green dusty citrus

flavor: petitgrain

FL/
FR

ketoisophorone

odor: Musty, woody, sweet, tea, citrus lemon with sl. brown nuances

flavor: Citrus, floral, musty, tea like with green sweet fruity nuances

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[Rose and Flower Oil and Extract](#)

odor: floral rose honey balsamic citrus

FL/
FR

[alpha-terpinyl acetate](#)

odor: herbal bergamot lavender lime citrus

flavor: Woody, citrus, spicy, floral, grapefruit and seedy

FL/
FR

[tridecanal](#)

odor: fresh clean aldehydic soapy citrus petal waxy grapefruit peel

flavor: fresh waxy clean cloth laundered cloth soapy aldehydic citrus rind grapefruit peel

FL (E,E)-2,4-

[undecadienal](#)

odor: Fatty, waxy, chicken with sweet nuances

flavor: Fatty, waxy green, with chicken nuances

FL/
FR

[undecanal](#)

odor: waxy soapy floral aldehydic citrus green fatty fresh laundry

flavor: Waxy, aldehydic, soapy with a citrus note and slight laundry detergent nuance

FL (E)-4- [undecenal](#)

odor: fatty aldehydic floral herbal citrus

FL/
FR

[10-undecenal \(aldehyde C-11 undecylenic\)](#)

odor: waxy aldehydic rose mandarin citrus soapy fatty

flavor: Fatty, oily and aldehydic with a mandarin, citrus nuance

[Senary \(Sixth\) - citrus](#)

FR

[abronia fragrance](#)

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Synonyms

FR

cucumber fragrance

FL/
FR

decanal (aldehyde C-10)

odor: sweet aldehydic waxy orange peel citrus floral

flavor: Waxy, fatty, citrus and orange peel with a slight green melon nuance

FL/
FR

dimethyl octanol

odor: waxy soapy aldehydic leathery musty citrus green

flavor: Fatty, waxy, soapy with floral rosy and fresh citrus woody nuances

FL/
FR

(±)-4-ethyl octanal

odor: floral waxy fatty milky lactonic citrus fruity

FR

florida soap fragrance

FL/
FR

geranyl propionate

odor: floral fresh waxy fruity rose tropical citrus geranium powdery

flavor: waxy fruity floral tropical rose herbal citrus vegetable

FL/
FR

ginger oleoresin africa

odor: woody spice herbal ginger terpene earthy citrus

flavor: spicy citrus herbal terpenic peppery woody oily

FL/
FR

green hexanal

odor: aldehydic dry grassy weedy green citrus fatty natural

flavor: green weedy grassy herbal aldehydic citrus fatty

FL

(E)-2-heptenal

odor: Intense green, fatty, oily, with fruity overtones

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havor: green, waxy, fresh vegetable, fruity, apple, guava, green banana

FR **hop fragrance**

**FL/
FR** **linalyl butyrate**

odor: Floral, fruity, sweet, blueberry, pineapple-like and citrus with a slight spice nuance

flavor: Floral, terpy, fruity, citrus and berry

**FL/
FR** **linalyl isobutyrate**

odor: light fruity lavender woody bergamot

flavor: Floral, fruity, sweet, berry, citrus

FR **melon carboxaldehyde**

odor: green melon fresh air aldehydic

FR **6-methoxy-2,6-dimethyl octanal**

odor: marine seashore ozone green fruity citrus

FR **3-methyl-6-ethyl-5-octen-1-ol**

odor: floral aldehydic muguet lily of the valley

**FL/
FR** **(1S,5R)-myrtenyl acetate**

odor: herbal fresh sweet fruity citrus

flavor: Woody, cedar-like, with fruity and floral nuances

**FL/
FR** **neroli absolute**

odor: sweet floral orangeflower petitgrain hyacinth honeysuckle citrus rind spicy honey

flavor: sweet floral clary sage citrus bergamot petitgrain mandarin citrus rind orangeflower honey winey

FL/ **3-octanol**

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FR	petitgrain fragrance
FL/ FR	petitgrain oil paraguay odor: sweet floral neroli herbal terpenic green citrus woody flavor: herbal floral lavender terpenic green citrus woody
FR	petitgrain specialty odor: sweet floral neroli herbal terpenic green citrus woody
FL/ FR	petitgrain tangerine oil odor: floral neroli herbal terpenic green citrus woody phenolic flavor: herbal citrus lavender terpenic green floral mandarin woody
FL/ FR	rhodinyi acetate odor: red rose powdery spicy geranium citrus leafy flavor: floral rose waxy citrus spicy geranium
FR	tangerine nitrile odor: sweet tangerine aldehydic fresh watery
FL/ FR	alpha-terpinene odor: woody terpene lemon herbal medicinal citrus flavor: Terpy, woody, piney, citrus lemon and lime with spice and mint nuances
FL/ FR	terpinyl isovalerate odor: sweet pine olibanum incense orange citrus flavor: bitter apple fruity
FL/ FR	tetradecanal odor: fatty waxy amber incense dry citrus peel musk flavor: Fatty, lactonic, coconut, woody and fishy with a fruity nuance

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FL/
FR

(E)-2-**tridecen-1-ol**

odor: mild waxy clean watery cilantro rue citrus rind laundered cloth fatty
flavor: waxy fatty citrus rind rue cilantro cucumber skin earthy metallic

FL/
FR

1-**undecanol**

odor: fresh waxy rose soapy clean clothes floral citrus
flavor: aldehydic soapy waxy sweet

FL/
FR

10-**undecen-1-ol**

odor: fresh floral waxy ozone clean citrus

FL/
FR

verbena absolute france

odor: Green, tea-like, hay, herbal with a sweet citrus nuance
flavor: Sweet, lemon, citrus, spice, waxy, with a hay-like nuance

Septenary (Seventh) - citrus

FL/
FR

butyl 2-decenoate

odor: fatty oily green dairy nasturtium clean citrus
flavor: fruity green fatty nasturtium oily cilantro soapy artichoke

FR

decumaria specialty

odor: floral hawthorn mimosa balsamic anisic herbal citrus vanilla

FL/
FR

dehydroxylinalool oxide

odor: green minty spice herbal rosemary phenolic
flavor: Woody, piney, spicy, minty with a green citrus nuance

FR

kumquat fragrance

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**FL/
FR**

sweet orange peel oil terpeneless

odor: citrus aldehydic orange peel zesty orange juicy citrus peel tart rhubarb

flavor: citrus aldehydic zesty orange peel citrus peel peely orange rind orange

**FL/
FR**

rhodinol

odor: floral red rose spicy waxy powdery geranium

flavor: Floral rosy, with waxy, powdery and heavy citrus and tropical nuances

FR

saffron pyranone

odor: bitter walnut nutty nut skin acorn saffron citrus herbal hot

flavor: woody old wood nutty

Octonary (Eighth) - citrus

FR

autumn carboxylate

odor: sweet anise floral clean autumn jasmin

**FL/
FR**

geranyl acetate

odor: floral rose lavender green waxy

flavor: Waxy, green, floral, oily and soapy with citrus and winey, rum nuances

**FL/
FR**

(Z)-3-hexen-1-yl propionate

odor: green pear apple fresh fruity waxy leafy

flavor: Green, apple and pear with an oily, waxy, slightly citrus note

**FL/
FR**

linalyl acetate

odor: sweet green citrus bergamot lavender woody

flavor: Floral, green, terpy, waxy, citrus, woody, herbal and spicy nuances

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FL/
FR

5-mercapto-5-methyl-3-hexanone

odor: sulfurous black currant bud tropical fruit peach apricot plum guava citrus

flavor: sulfurous green tropical black currant bud peach apricot passion fruit melon rind

FL/
FR

methyl dihydrojasmonate

odor: floral oily jasmin green lactonic tropical natural

flavor: Sweet, floral, citrus, fruity and berry with tutti-frutti undertones

FL

12-methyl tridecanal

odor: sweet, fatty, waxy, rich savory animal fatty with a citrus and cilantro like nuance

flavor: Waxy, aldehydic citrus, candle waxy and soapy, with a savory fatty slightly rancid cilantro like note and with a hint of mango and carrot

FL/
FR

neryl formate

odor: green rose geranium herbal fruity tea

flavor: Fruity, green, citrus, tropical with a floral nuance

FL/
FR

3-octyl formate

odor: green, juicy, fruity apple and pear, waxy, tropical with citrus nuances

flavor: Waxy, fruity green pear, banana, golden delicious apple and peach with vegetative nuances

FL/
FR

perillaldehyde

odor: fresh green herbal grassy sweet mint cumin spicy citrus

flavor: aromatic sweet woody spicy waxy aldehydic cinnamyl orange lime

FL/
FR

styralyl propionate

odor: fresh sweet floral rose gardenia green weedy

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The Good Scents Company Information Listings

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Odor Descriptors for orange

Primary (First) - orange

FL/
FR

butyl nonanoate

odor: orange apricot rose

FR

citrus aurantium amara flower cera

odor: orangeflower

FL/
FR

citrus aurantium var. amara flower extract

odor: orangeflower

flavor: orangeflower

FR

citrus sinensis flower cera

odor: floral orangeflower

FR

citrus sinensis flower extract

odor: orangeflower

FR

citrus sinensis flower water

odor: floral orangeflower

FL/
FR

citrus sinensis peel extract

odor: orange

flavor: orange

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FL/
FR

citrus sinensis valencia peel extract

odor: orange

flavor: orange

FL/
FR

citrus sinensis valencia peel extract

odor: orange

flavor: orange

FL

2,4-decadienal

odor: Fatty, oily, green, chicken skin-like

flavor: Fatty, oily, chicken, fried, with a slight rancid tallow nuance

FL/
FR

2-decenal

odor: fatty orange rose aldehydic floral green

flavor: fatty fried citrus

FR

(Z)-4-decenal diethyl acetal

odor: bitter orange

FR

3-dodecenal

odor: bitter orange mandarin coriander

FR

clementine mandarin fragrance

FR

methyl indole-1-carboxylate

odor: orange anthranilate yara yara ocimene

FR

mimusops elengi flower oil

odor: sweet orangeflower tuberose minty balsamic

FR

mimusops elengi flower oil CO2 extract

odor: sweet orangeflower tuberose heavy

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odor: sweet orange or mandarin

nonyl heptanoate

odor: orange rose herbal cognac

FR

orange blossom fragrance

FL/
FR

orange carbonyls

odor: natural orange juice

flavor: orange

FR

orange chiffon fragrance

FR

orange cinnamon fragrance

FR

orange clove fragrance

FR

orange cranberry fragrance

FR

orange cream fragrance

FL/
FR

orange essence oil

odor: orange

flavor: orange

FL/
FR

orange essence oil folded

odor: sharp aldehydic orange juicy fresh

flavor: orange

FL/
FR

orange essence oil terpeneless

odor: sweet orange

flavor: orange

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FL/
FR

bitter orange flower absolute CO2 extract

odor: orangeflower

FR

orange flower specialty

odor: orangeflower

FR

orange fragrance

FL/
FR

orange fruit oil

odor: natural fresh sweet citrus pressed oranges aldehydic
flavor: orange

FR

orange ginger fragrance

FL/
FR

sweet orange infusions

odor: orange
flavor: orange

FR

orange marmalade fragrance

FR

orange nitrile

odor: orange green sea algae watery clean cloths oily

FL/
FR

blood orange oil italy

odor: sweet orange citrus aldehydic terpenic tangerine pulpy
flavor: sweet juicy citrus orange fruity pulpy tangerine aldehydic

FL/
FR

blood orange oil (citrus sinensis var. sanguinello) italy

odor: sweet orange aldehydic tangerine citrus
flavor: juicy orange tangerine tangelo aldehydic

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FR

orange oil replacer

odor: citrus juicy fruity aldehydic terpenic peely aromatic

FL/
FR

orange oil terpenes

odor: fresh juicy sweet orange

FL/
FR

bitter orange peel oil

odor: citrus orange dry terpenic aldehydic woody fresh leaf

flavor: citrus orange terpenic tangerine aldehydic pulpy juicy

FL/
FR

sweet orange peel oil

odor: orange fresh juicy sweet

flavor: orange

FL/
FR

sweet orange peel oil

odor: orange fresh juicy sweet

flavor: orange

FL/
FR

bitter orange peel oil brazil

odor: citrus orange dry woody mandarin cognac terpenic aromatic

flavor: Bitter, fruity, Madeira, cognac and woody with aromatic nuances

FL/
FR

bitter orange peel oil brazil

odor: citrus orange dry woody mandarin cognac terpenic aromatic

flavor: Bitter, fruity, Madeira, cognac and woody with aromatic nuances

sweet orange peel oil c.p. (citrus sinensis var. biondo comune) blond italy

odor: citrus orange

flavor: orange

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sweet **orange peel oil c.p. (citrus sinensis var. navelina) blond italy**

odor: citrus orange

flavor: orange

sweet **orange peel oil c.p. (citrus sinensis var. navelina) blond italy**

odor: citrus orange

flavor: orange

sweet **orange peel oil c.p. (citrus sinensis var. ovale) blond italy**

odor: citrus orange

flavor: orange

sweet **orange peel oil c.p. (citrus sinensis var. ovale) blond italy**

odor: citrus orange

flavor: orange

sweet **orange peel oil c.p. (citrus sinensis var. valencia late) blond italy**

flavor: orange

sweet **orange peel oil c.p. (citrus sinensis var. valencia late) blond italy**

flavor: orange

sweet **orange peel oil c.p. (citrus sinensis var. washington navel) blond italy**

odor: citrus orange

flavor: orange

sweet **orange peel oil c.p. (citrus sinensis var. washington navel) blond italy**

odor: citrus orange

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flavor: orange

FL/
FR

sweet [orange peel oil c.p. brazil](#)

odor: orange fresh citrus juicy fruity aldehydic terpenic peely aromatic sweet
flavor: orange

FL/
FR

sweet [orange peel oil c.p. california](#)

odor: orange fresh juicy sweet
flavor: orange

FL/
FR

sweet [orange peel oil c.p. california](#)

odor: orange fresh juicy sweet
flavor: orange

FL/
FR

sweet [orange peel oil c.p. china](#)

odor: fresh orange peel
flavor: orange

FL/
FR

sweet [orange peel oil c.p. china](#)

odor: fresh orange peel
flavor: orange

FL/
FR

sweet [orange peel oil c.p. egypt](#)

odor: citrus orange
flavor: orange

FL/
FR

sweet [orange peel oil c.p. egypt](#)

odor: citrus orange
flavor: orange

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FL/
FR **sweet** [orange peel oil c.p. florida](#)

odor: orange fresh juicy sweet

flavor: orange

FL/
FR **sweet** [orange peel oil c.p. french guinea](#)

odor: citrus orange

flavor: orange

FL/
FR **sweet** [orange peel oil c.p. french guinea](#)

odor: citrus orange

flavor: orange

FL/
FR **sweet** [orange peel oil c.p. italy](#)

odor: citrus orange

flavor: orange

FL/
FR **sweet** [orange peel oil c.p. italy](#)

odor: citrus orange

flavor: orange

FL/
FR **sweet** [orange peel oil c.p. spain](#)

odor: citrus orange

flavor: orange

FL/
FR **sweet** [orange peel oil c.p. spain](#)

odor: citrus orange

flavor: orange

FL/ **sweet** [orange peel oil c.p. temple florida](#)

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odor: orange fresh juicy sweet

flavor: orange

FL/
FR

sweet orange peel oil c.p. valencia

odor: orange fresh juicy sweet

flavor: orange

FL/
FR

sweet orange peel oil c.p. west indian

odor: citrus orange

flavor: orange

FL/
FR

sweet orange peel oil c.p. west indian

odor: citrus orange

flavor: orange

FL/
FR

sweet orange peel oil decolorized

odor: citrus orange juicy

flavor: orange

FL/
FR

sweet orange peel oil decolorized

odor: citrus orange juicy

flavor: orange

FL/
FR

sweet orange peel oil distilled

odor: fresh sweet orange juicy

flavor: orange

FL/
FR

sweet orange peel oil distilled

odor: fresh sweet orange juicy

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avor: sweet juicy orange fresh peel

FL/FR **sweet orange peel oil folded**

odor: sweet fresh juicy tangy orange peel citrus

flavor: sweet juicy orange fresh peel

FL/FR **sweet orange peel oil folded brazil**

odor: orange peel

flavor: orange peel

FL/FR **sweet orange peel oil folded brazil**

odor: orange peel

flavor: orange peel

FL/FR **sweet orange peel oil folded california**

odor: sweet fresh juicy tangy orange peel citrus

flavor: sweet juicy orange fresh peel

FL/FR **sweet orange peel oil folded california**

odor: sweet fresh juicy tangy orange peel citrus

flavor: sweet juicy orange fresh peel

FL/FR **sweet orange peel oil folded florida**

odor: sweet fresh juicy tangy orange peel citrus

flavor: sweet juicy orange fresh peel

FL/FR **sweet orange peel oil folded florida**

odor: sweet fresh juicy tangy orange peel citrus

flavor: sweet juicy orange fresh peel

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FL/
FR

sweet [orange peel oil folded israel](#)

odor: fresh orange

flavor: orange

FL/
FR

sweet [orange peel oil folded temple](#)

odor: fresh orange

flavor: orange

FL/
FR

sweet [orange peel oil folded temple](#)

odor: fresh orange

flavor: orange

FL/
FR

sweet [orange peel oil folded valencia](#)

odor: citrus orange

flavor: orange

FL/
FR

sweet [orange peel oil folded valencia](#)

odor: citrus orange

flavor: orange

FL/
FR

sweet [orange peel oil folded valencia](#)

odor: citrus orange

flavor: orange

FL/
FR

sweet [orange peel oil furanocoumarin reduced](#)

odor: orange

flavor: orange

FL/

sweet [orange peel oil furanocoumarin reduced](#)

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		odor: orange dry woody fresh leaf flavor: bitter orange
FR		orange peel oil laraha odor: orange flavor: orange
FR		orange peel oil laraha odor: orange flavor: orange
FL/ FR	bitter	orange peel oil rectified (furo coumarin reduced) odor: fresh citrus bitter orange floral flavor: citrus orange terpenic aldehydic pulpy
FL/ FR	bitter	orange peel oil rectified (furo coumarin reduced) odor: fresh citrus bitter orange floral flavor: citrus orange terpenic aldehydic pulpy
FL	sweet	orange peel oil sesquiterpeneless odor: fresh orange flavor: orange
FL	sweet	orange peel oil sesquiterpeneless odor: fresh orange flavor: orange
FL/ FR	bitter	orange peel oil terpeneless odor: Sweet, juicy, floral, aldehydic orange with woody citron nuances flavor: Sweet, juicy, peely, with aldehydic and floral nuances
FL/ FR	sweet	orange peel oil terpeneless

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odor: citrus aldehydic orange peel zesty orange juicy citrus peel tart marmalade
 flavor: citrus aldehydic zesty orange peel citrus peel peely orange rind orange

FL/ wild sw
FR eet **orange peel oil west indian**

odor: fresh orange peel grapefruit
 flavor: orange peel

FL/ wild sw
FR eet **orange peel oil west indian**

odor: fresh orange peel grapefruit
 flavor: orange peel

FR **orange sherbet fragrance**

FR **orange specialty**
 odor: citrus orange

FR **orange spice fragrance**

FR **orange vanilla fragrance**

FL/ bitter
FR **orangeflower absolute morocco**

odor: floral orange blossom green stem honey
 flavor: Floral, sweet, fruity, jammy, rosy, perfume, jasmine with honeysuckle and lilac nuances

FR **orangeflower absolute replacer**
 odor: orangeflower

FL/ bitter
FR **orangeflower absolute tunisia**

odor: sweet orangeflower green stem
 flavor: orangeflower

FR **bitter orangeflower concrete**

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FL/
FR

bitter orangeflower water

odor: orangeflower

flavor: orangeflower

FL/
FR

bitter orangeflower water absolute

odor: dry floral musty herbal mandarin leaf petitgrain

flavor: orangeflower

FL

orangeflowers

odor: orangeflower

flavor: orangeflower

FL/
FR

propyl anthranilate

odor: orangeflower vine herbal

FL/
FR

beta-sinensal

odor: orange sweet fresh waxy juicy

FL/
FR

tangelo peel oil

odor: citrus orange

flavor: sweet citrus tangerine mandarin orange fruity citrus peel terpenic

FR

sesqui terpene fractions

odor: orange peel

Secondary (Second) - orange

FR

acetyl tetralin

odor: floral orangeflower musk grape

FR

chocolate orange fragrance

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odor: citrus orange aldehydic peely terpenic mandarin
flavor: citrus fruity aldehydic peely orange mandarin terpenic

FR

clean nitrile

odor: fresh clean orangeflower green wet

FR

cranberry orange spice fragrance

**FL/
FR**

2-decanone

odor: orange floral fatty peach
flavor: fermented cheesy

FR

decyl formate

odor: honeysuckle orange blossom

FL

**(E,E)-2,
4-**

dodecadienal

odor: grapefruit orange fatty citrus
flavor: fatty waxy citrus peel chicken skin

FR

dodecane nitrile

odor: dry citrus orange peel metallic spicy

FR

1-formyl-3-isohexenyl-3-cyclohexene

odor: aldehydic orange ozonic fruity clean outdoors

**FL/
FR**

heptyl nonanoate

odor: winey sweet oily floral orangeflower rose

FR

leerall / methyl anthranilate schiff's base

odor: fresh lily floral sweet orangeblossom

FR

lilyall / methyl anthranilate schiff's base

odor: fresh green orangeflower lily citrus hydroxycitronellal

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FR **[methyl anthranilate / isocyclocitral schiff's base](#)**

odor: sweet woody indole orange blossom dry

**FL/
FR** **[methyl dimethyl anthranilate](#)**

odor: fruity orange leaf petitgrain

**FL/
FR** **[beta-naphthyl ethyl ether](#)**

odor: naphtha floral orange blossom powdery grape

flavor: Powdery, floral, soapy and heavy with a berry and grape nuance

**FL/
FR** **[alpha-naphthyl methyl ketone](#)**

odor: sweet neroli orange blossom powdery

[2-naphthyl phenyl ketone](#)

odor: naphthyl orangeblossom floral

**FL/
FR** **[neroli absolute](#)**

odor: sweet floral orangeflower petitgrain hyacinth honeysuckle citrus rind spicy honey

flavor: sweet floral clary sage citrus bergamot petitgrain mandarin citrus rind orangeflower honey winey

**FL/
FR** **[neroli extract](#)**

odor: floral orangeflower narcissus petitgrain phenolic cortex honey spicy winey

flavor: floral clary sage spicy petitgrain tropical orangeflower honey winey

FR **[neroli fragrance](#)**

**FL/
FR** **[neroli oil](#)**

odor: floral orangeblossom citrus petitgrain mandarin herbal

flavor: neroli

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- | | |
|-----------|---|
| FR | <p>neroli oil replacer
 odor: sweet floral orangeflower citrus petitgrain mandarin herbal</p> |
| FR | <p>neroli specialty
 odor: neroli floral orangeflower citrus</p> |
| FR | <p>nonanal / methyl anthranilate schiff's base
 odor: sweet floral orangeflower rose aldehydic</p> |
| | <p>nonyl nonanoate
 odor: orange rose fruity oily orange aldehydic</p> |
| FR | <p>nyctanthes arbor-tristis flower absolute
 odor: fresh orangeflower jasmin gardenia phenolic</p> |
| FR | <p>octanal glycol acetal
 odor: fresh citrus orange aldehydic fatty</p> |
| FR | <p>iso octanol
 odor: fatty orange rose</p> |
| FL/
FR | <p>octyl phenyl acetate
 odor: rooty orange basil bois de rose earthy honey</p> |
| FL/
FR | <p>bitter orange peel oil
 odor: citrus orange dry terpenic aldehydic woody fresh leaf
 flavor: citrus orange terpenic tangerine aldehydic pulpy juicy</p> |
| FR | <p>2-pentyl-2-cyclohexen-1-one
 odor: muguet orange coconut lactonic jasmin</p> |
| FL/
FR | <p>petitgrain absolute morocco
 odor: petitgrain floral orangeflower green dusty citrus</p> |

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avor: petitgrain

FR

petitgrain oil fractions

odor: floral orangeflower green tropical woody

FR

petitgrain oil replacer

odor: fresh floral sweet orangeflower neroli woody herbal

FL/
FR

satinaldehyde

odor: fresh cyclamen orange dry sweet aldehydic amber woody costus

flavor: Orangeflower, sweet, floral, melon-like with a green fruity nuance

FL/
FR

alpha-sinensal

odor: citrus orange powdery aldehydic juicy mandarin sour candy waxy

flavor: citrus green citrus peel citrus rind petitgrain orange peel aldehydic earthy bell pepper woody

FL/
FR

surfleurs d'oranger oil

odor: fresh sweet floral orangeflower

FR

tangerine fragrance

FL/
FR

tangerine oil america

odor: citrus orange aldehydic peely terpenic mandarin

flavor: citrus aldehydic fruity peely orange mandarin terpenic

FL/
FR

tangerine oil california

odor: citrus orange aldehydic peely terpenic mandarin

flavor: citrus aldehydic fruity peely orange mandarin terpenic tropical

FR

tangerine specialty

odor: citrus orange aldehydic peely terpenic mandarin

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FL/
FR

2-undecenal

odor: fresh fruity orange peel

flavor: waxy, citrus peel, slightly soapy

FR

ylang ylang specialty

odor: sweet ylang floral orangeblossom natural

Tertiary (Third) - orange

FR

abies alba cone oil

odor: fresh pine bitter orange peel

FR

cardamom liquid resin

odor: warm woody orange citrus balsam

FR

champaca absolute

odor: dry tea orangeflower ylang carnation guaiacwood

FR

champaca absolute replacer

odor: dry tea orangeflower ylang carnation guaiacwood

FR

champaca fragrance

FL/
FR

citral propylene glycol acetal

odor: sweet citrus lemon orange

FL/
FR

citrus paradisi peel extract

odor: Grapefruit, aldehydic, citrus orange, a slight sulfurous topnote and a nootk etone dryout

flavor: Citrus, juicy grapefruit with a pulpy mouthfeel

FR

curacao specialty

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FL/
FR

decanal (aldehyde C-10)

odor: sweet aldehydic waxy orange peel citrus floral

flavor: Waxy, fatty, citrus and orange peel with a slight green melon nuance

FL/
FR

3-decanol

odor: floral fatty orange musty mushroom

FL/
FR

(E)-4-decenal

odor: fresh aldehydic citrus orange mandarin tangerine green fatty

flavor: green citrus aldehydic fatty waxy mandarin tangerine watermelon rind

FR

pink frangipani absolute

odor: sweet gardenia floral orangeflower neroli

FR

hydroxycitronellal / methyl anthranilate schiff's base

odor: floral lily orange blossom sweet

FR

mandarin fragrance

odor: mandarin

FL/
FR

mandarin oil

odor: citrus floral mandarin orange

flavor: mandarin

FL/
FR

mandarin oil italy

odor: floral citrus mandarin orange

flavor: mandarin

FR

mandarin oil replacer

odor: mandarin

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odor: fresh green juicy sweet orange

FR **3-methyl-4-heptyl oxybutyraldehyde**
odor: aldehydic, citrus, orange, tangy, juicy, and zesty notes

FR **methyl indole-1-carboxylate**
odor: orange anthranilate yara yara ocimene

FR **methyl 2-methyl benzoate**
odor: floral ylang orangeflower grape

FR **michelia champaca flower oil**
odor: dry tea orangeflower ylang carnation guaiacwood

FR **michelia champaca flower oil CO2 extract**
odor: dry tea orangeflower ylang carnation guaiacwood

**FL/
FR** **beta-naphthyl methyl ether**
odor: sweet naphthyl floral orange blossom acacia neroli
flavor: naphthyl floral orangeflower acacia grape plum powdery

**FL/
FR** **beta-naphthyl methyl ketone**
odor: sweet neroli orange blossom neroli powdery
flavor: sweet floral orangeflower orange neroli honey naphthyl citrus

**FL/
FR** **neroli oil CO2 extract**
odor: sweet fresh green neroli orangeblossom
flavor: neroli

**FL/
FR** **neroli oil morocco**
odor: sweet fresh green petitgrain orangeflower citrus mandarin herbal
flavor: floral terpenic petitgrain aldehydic herbal tropical fruity

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odor: fresh gardenia jasmine orangeflower phenolic

FR ocean propanal / methyl anthranilate schiff's base

odor: fresh green floral orangeblossom ozone leafy cortex

**FL/
FR**

octanol

odor: waxy green orange aldehydic rose mushroom

flavor: Waxy, green, citrus, orange and aldehydic with a fruity nuance

**FL/
FR**

octyl formate

odor: fruity rose orange waxy cucumber

flavor: green oily orange cilantro waxy citrus

**FL/
FR**

sweet orange peel oil terpeneless

odor: citrus aldehydic orange peel zesty orange juicy citrus peel tart rhubarb

flavor: citrus aldehydic zesty orange peel citrus peel peely orange rind orange

**FL/
FR**

2-pentenal

odor: pungent green apple orange tomato

FR

plumeria fragrance

FR

robinia pseudoacacia absolute

odor: mimosa cassie orangeflower sweet spicy

rue flower oil colombia

**FL/
FR**

rue oil

odor: sharp herbal fruity orange acrid

flavor: rue

FL/

rue oil cuba

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[odor: dry orange blossom Italy neron](#)

FL/
FR

turmeric root oil china

odor: spicy fresh sweet orange ginger galanga
flavor: turmeric

FL/
FR

valencene

odor: sweet fresh citrus grapefruit woody orange asprin dry green oily
flavor: orange citrus fruity juicy citrus peel peely woody

Quaternary (Fourth) - orange

FR

abies alba cone oil

odor: fresh pine bitter orange peel

FR

bergamot blossom fragrance

FL/
FR

bergamot oil italy

odor: citrus woody orange linalyl acetate
flavor: citrus bergamot

FL/
FR

bergamot oil ivory coast

odor: citrus woody orange linalyl acetate
flavor: bergamot

FL/
FR

cardamom oleoresin

odor: cardamom medicinal soapy herbal orange rind camphoreous weedy hay
flavor: cardamom herbal spicy balsamic camphoreous floral woody orange rind ginger

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FL/
FR

decanal diethyl acetal

odor: Waxy, green, aldehydic and orange with cognac and coconut nuances

flavor: Waxy, aldehydic, green and orange with coconut nuances

FR

decanal / methyl anthranilate schiff's base

odor: fresh fatty waxy sweet dry orange blossom

FL/
FR

decanol

odor: fatty waxy floral orange sweet clean watery

flavor: waxy green fatty floral costus watery citrus

FL/
FR

3-decanone

odor: waxy fruity citrus orange floral green

FL/
FR

4-decenal

odor: aldehydic fatty citrus orange

FL/
FR

(Z)-4-decenal

odor: citrus aldehydic orange watery cardamom

flavor: zesty citrus peel herbal fresh fatty fruity floral watery aldehydic

2,4-dimethyl-alpha-isopropyl-3-cyclohexene-1-methanol

odor: sassafrass-like, minty, juicy fruit and orange-like aroma

flavor: sassafrass-like, minty, juicy fruit-like and orange-like flavor

FL/
FR

2-dodecanone

odor: fruity citrus floral orange

flavor: fatty

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FL/
FR

ethyl anthranilate

odor: sweet floral grape orangeblossom wintergreen

flavor: sweet fruity floral minty wintergreen

FR **white** **frangipani absolute**

odor: floral natural sweet orangeflower gardenia

FR **white** **frangipani concrete**

odor: floral natural sweet orangeflower gardenia

FR **honeysuckle absolute**

odor: sweet fatty floral jasmin orangeflower tuberose

FR **honeysuckle absolute replacer**

odor: sweet floral fatty jasmin orangeflower tuberose

FR **intreleven aldehyde (IFF)**

odor: aldehydic floral marine citrus orange fatty

FR **ivy carbaldehyde / methyl anthranilate schiff's base**

odor: fresh green sweet floral orangeflower leafy

FL/
FR

linalyl anthranilate

odor: fresh linalool orange blossom herbal gardenia woody

flavor: floral terpenic citrus petitgrain mandarin orangeflower

FR **mandarin fragrance**

odor: mandarin

FL/
FR

mandarin oil

odor: citrus floral mandarin orange

flavor: mandarin

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odor: powerful fresh citrus aldehydic mandarin

FL **6-methyl octanal**
odor: fatty green juicy orange

**FL/
FR** **methyl octanoate**
odor: Waxy, green, sweet, orange and aldehydic with vegetative and herbal nuances
flavor: Green, fruity, waxy, citrus, aldehydic and fatty

**FL/
FR** **nerolin fragarol**
odor: sweet naphthyl strawberry fruity orange blossom
flavor: sweet fruity strawberry naphthyl grape orangeflower

**FL/
FR** **(+)-nootkatone**
odor: grapefruit peel citrus gardenia woody
flavor: Grapefruit, citrus, orange and bitter

**FL/
FR** **octanal (aldehyde C-8)**
odor: aldehydic waxy citrus orange peel green herbal fresh fatty
flavor: aldehydic green waxy fatty peely citrus orange

**FL/
FR** **bitter orange peel oil terpeneless**
odor: Sweet, juicy, floral, aldehydic orange with woody citron nuances
flavor: Sweet, juicy, peely, with aldehydic and floral nuances

**FL/
FR** **(E)-2-pentenal**
odor: Pungent, green, fruity apple-like
flavor: Green, waxy and fruity

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FL/
FR

alpha-terpinyl methyl ether

odor: citrus grapefruit bergamot orangeflower vegetable celery spicy earthy
flavor: woody celery earthy sweet spicy

FL/
FR

(Z)-8-tetradecenal

odor: citrus fruity floral orange peel fatty waxy green herbal beeswax

FL/
FR

undecanal

odor: waxy soapy floral aldehydic citrus green fatty fresh laundry
flavor: Waxy, aldehydic, soapy with a citrus note and slight laundry detergent nuance

FR

wallflower absolute

odor: sweet floral jasmin honey orangeflower ylang narcissus carnation

Quinary (Fifth) - orange

FL

acetaldehyde

odor: pungent ethereal aldehydic fruity
flavor: Pungent, fresh, aldehydic, refreshing and green

FL/
FR

bergamot oil

odor: citrus woody orange linalyl acetate
flavor: bergamot

FL/
FR

bergamot oil bergaptene reduced italy

odor: citrus floral woody orange linalyl acetate
flavor: Citrus,floral, rosy, green, lemon and fatty with a ginger and lime nuance

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FR

bergamot specialty

odor: bergamot

FL/
FR

cubeb oil

odor: fresh spicy bois de rose herbal woody smokey
flavor: cubeb

FL/
FR

(Z)-4-decen-1-yl acetate

odor: oily estery fruity juicy orange floral rose spicy

FL/ (E,Z)-2,
FR 6-

dodecadienal

odor: deep citrus mandarin orange melon
flavor: Green, herbal, waxy and aldehydic

FL/
FR

2-dodecenal

odor: green citrus fruity mandarin orange herbal
flavor: fatty waxy citrus peel cilantro herbal

FL/
FR

heptanal dimethyl acetal

odor: green privet fruity tropical orange
flavor: Dirty green with waxy and fatty nuances

FL/
FR

(Z)-3-hexen-1-yl anthranilate

odor: sweet green fruity concord grape jasmin orangeflower
flavor: Floral lilac and jasmin with a fruity berry and anthranilate grape nuance. It leaves an interesting woody and jammy mouth feel

FR

kumquat fragrance

FL/
FR

methyl anthranilate

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odor: fresh clean fatty floral rose orange dusty wet oily
flavor: waxy citrus rue aldehydic orange oily fatty spicy

**FL/
FR**

2-**nonanol**

odor: Waxy, green, creamy, citrus orange, cheesy with slight fruity undertones
flavor: Waxy, soapy, musty with green fruity and dairy nuances

**FL/
FR**

sweet orange peel oil terpeneless

odor: citrus aldehydic orange peel zesty orange juicy citrus peel tart rhubarb
flavor: citrus aldehydic zesty orange peel citrus peel peely orange rind orange

FR

papaya fragrance

FR

papaya specialty

odor: papaya floral fruity tropical citrus orange gooseberry cranberry cortex

**FL/
FR**

terpinyl isovalerate

odor: sweet pine olibanum incense orange citrus
flavor: bitter apple fruity

**FL/
FR**

tuberose absolute chassis

odor: heavy floral sweet spicy honeysuckle balsam orangeflower ylang
flavor: tuberose

FR

tuberose absolute replacer

odor: floral sweet spicy honeysuckle balsamic orangeflower ylang

Senary (Sixth) - orange

FR

bergamot fragrance

FR

bergamot oil replacer

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FR

gardenia taitensis flower absolute

odor: floral green watery tropical jasmin orangeflower honey green tea

FR

hibiscus fragrance

FR

kumquat fragrance

FR

kumquat specialty

odor: kumquat

FR

labdanum ethanone

odor: strong dry woody labdanum rose musk orangeflower

3-(methallylthio)-2,6-dimethyl-4-heptanone

FL/
FR

neryl butyrate

odor: Green, waxy, oily and fatty

flavor: Green, fruity, fatty, floral, berry with some tropical nuances

FL/
FR

nonanal (aldehyde C-9)

odor: waxy aldehydic rose fresh orris orange peel fatty peely

flavor: Effervescent, aldehydic citrus, cucumber and melon rindy, with raw potato and oily nutty and coconut like nuances

FR

pittosporum specialty

odor: floral jasmin honey petroleum

FL/
FR

tuberose absolute (from pommade)

odor: floral sweet spicy honeysuckle balsam orangeflower ylang

flavor: tuberose

FL/
FR

(E)-2-undecenal

odor: Aldehydic, waxy, citrus, with a fatty green nuance

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FR **2,4-dimethyl-3-cyclohexene-1-methanyl acetate**

odor: citrus floral green grapefruit gardenia petal

**FL/
FR**

dodecanal (aldehyde C-12 lauric)

odor: soapy waxy aldehydic citrus green floral

flavor: Soapy, waxy, citrus, orange mandarin

FR

grapefruit specialty

odor: grapefruit

FR

mandarin fragrance

odor: mandarin

**FL/
FR**

mandarin oil

odor: citrus floral mandarin orange

flavor: mandarin

FR

mandarin oil replacer

odor: mandarin

FR

mandarin specialty

odor: powerful fresh citrus aldehydic mandarin

FR

methyl anthranilate / hexyl cinnamaldehyde schiff's base

odor: fresh soapy waxy clean fatty green herbal orangeflower

Octonary (Eighth) - orange

FR

grapefruit fragrance

**FL/
FR**

grapefruit oil

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odor: sweet dry citrus bitter aldehydic terpene fruity tropical orange
flavor: citrus terpene aldehydic bitter orange powdery tropical

**FL/
FR**

grapefruit oil replacer

odor: grapefruit
flavor: grapefruit

FR

honeysuckle fragrance

FR

honeysuckle specialty

odor: honeysuckle

**FL/
FR**

tuberose absolute (from concrete)

odor: floral sweet spicy honeysuckle balsam orangeflower ylang
flavor: floral green weedy peppery magnolia minty balsamic

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for
Odor (Odour)*

*Search
for
Flavor (Flavour)*

*Search for
Name within name*

Your search for: "citrus orange" Odor

curacao specialty

Odor : aldehydic citrus orange floral terpenic

4-decenal

CAS : 30390-50-2 **FEMA :** 3264 **JECFA :** 326 **Flavis :** 05.096

Odor : aldehydic fatty citrus orange

intreleven aldehyde (IFF)

CAS : 112-45-8 **EC :** 203-973-1

Odor : aldehydic floral marine citrus orange fatty

octanal (aldehyde C-8)

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T

tangelo peel oil

CAS : 72869-73-9 FEMA : 4854

Odor : citrus orange

Flavor : sweet citrus tangerine mandarin orange fruity citrus peel terpenic

orange specialty

Odor : citrus orange

sweet orange peel oil folded valencia

CAS : 8008-57-9 EC : 600-006-9 FEMA : 2825

Odor : citrus orange

Flavor : orange

sweet orange peel oil c.p. french guinea

CAS : 8008-57-9 EC : 600-006-9 FEMA : 2825

Odor : citrus orange

Flavor : orange

sweet orange peel oil c.p. italy

CAS : 8008-57-9 EC : 600-006-9 FEMA : 2825

Odor : citrus orange

Flavor : orange

sweet orange peel oil c.p. west indian

CAS : 8008-57-9 EC : 600-006-9 FEMA : 2825

Odor : citrus orange

Flavor : orange

sweet orange peel oil c.p. spain

CAS : 8008-57-9 EC : 600-006-9 FEMA : 2825

Odor : citrus orange

Flavor : orange

sweet orange peel oil c.p. egypt

CAS : 8008-57-9 EC : 600-006-9 FEMA : 2825

Odor : citrus orange

Flavor : orange

sweet orange peel oil c.p. (citrus sinensis var. biondo comu

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B

T

nd italy

Odor : citrus orange Flavor : orange

sweet orange peel oil c.p. (citrus sinensis var. ovale) blond i taly

Odor : citrus orange Flavor : orange

sweet orange peel oil c.p. (citrus sinensis var. valencia late) blond italy

Odor : citrus orange Flavor : orange

sweet orange peel oil c.p. (citrus sinensis var. washington n avel) blond italy

Odor : citrus orange Flavor : orange

tangerine specialty

Odor : citrus orange aldehydic peely terpenic mandarin

citrus reticulata blanco var. tangerine oil

CAS : 8016-85-1 FEMA : 3041

Odor : citrus orange aldehydic peely terpenic mandarin

Flavor : citrus fruity aldehydic peely orange mandarin terpenic

tangerine fragrance

Odor : citrus orange aldehydic peely terpenic mandarin fruity

bitter orange peel oil brazil

CAS : 68916-04-1 FEMA : 2823

Odor : citrus orange dry woody mandarin cognac terpenic aromatic

Flavor : bitter, fruity, madeira, cognac and woody with aromatic nuances

dextro-limonene

CAS : 5989-27-5 EC : 227-813-5 FEMA : 2633 JECFA : 1326 Flavis : 01.045

Odor : citrus orange fresh sweet

Flavor : sweet, orange, citrus and terpy

sweet orange peel oil decolorized

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B

T

clementine mandarin fragrance

Odor : citrus orange mandarin

alpha-sinensal

CAS : 17909-77-2 EC : 241-854-6 Flavis : 05.130

Odor : citrus orange powdery aldehydic juicy mandarin sour candy waxy

Flavor : citrus green citrus peel citrus rind petitgrain orange peel aldehydic earthy bell pepper woody

dodecane nitrile

CAS : 2437-25-4 EC : 219-440-1

Odor : dry citrus orange peel metallic spicy

(E)-4-decenal

CAS : 65405-70-1 EC : 265-741-6 FEMA : 3264

Odor : fresh aldehydic citrus orange mandarin tangerine green fatty

Flavor : green citrus aldehydic fatty waxy mandarin tangerine watermelon rind

octanal glycol acetal

CAS : 4359-57-3 EC : 224-438-9

Odor : fresh citrus orange aldehydic fatty

(E)-2-undecenal

CAS : 53448-07-0 EC : 258-559-3 FEMA : 3423 Flavis : 05.184

Odor : fresh fruity citrus orange peel

Flavor : waxy, aldehydic, green, with a citrus and meaty nuance

papaya fragrance

Odor : papaya floral fruity tropical citrus orange gooseberry cranberry cortex

papaya specialty

Odor : papaya floral fruity tropical citrus orange gooseberry cranberry cortex

tangerine oil california

CAS : 8016-85-1 FEMA : 3041

Odor : sweet tangerine fresh citrus orange aldehydic

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B

T

Odor : sweet tangerine fresh citrus orange aldehydic citral

Flavor : citrus aldehydic fruity peely orange mandarin terpenic

3-decanone

CAS : 928-80-3 **EC :** 213-183-9 **FEMA :** 3966 **JECFA :** 1118 **Flavis :** 07.15
1

Odor : waxy fruity citrus orange floral green

2-nonanol

CAS : 628-99-9 **EC :** 211-065-1 **FEMA :** 3315 **JECFA :** 293 **Flavis :** 02.087

Odor : waxy green creamy citrus orange cheese fruity

Flavor : waxy, soapy, musty with green fruity and dairy nuances

Showing results 1 to 35 of 35

Introduction: why do we need a science of well-being?

1. BACKGROUND AND CONTEXT TO THE MEETING

The Royal Society Discussion Meeting on 'The science of well-being: integrating neurobiology, psychology and social science' was convened to advance our scientific understanding of life going well; that is to say, a life characterized by health and vitality, by happiness, creativity and fulfilment, and by the sorts of positive social relationships and civic institutions that harness and enhance these desirable characteristics.

This fresh approach has a crucial contribution to make, because biomedical and behavioural sciences have long operated on the assumption that by studying disorder we would come to understand effective functioning. However, recent developments show this assumption to be false. Studying depression sheds no light on happiness; studying Alzheimer's disease tells us little about successful ageing; and studying learning disability is of scant value in understanding intellectual excellence. It has become clear that a scientific understanding of well-being is both necessary and timely. Consider, for example, how epidemics of eating disorder, substance abuse and depression currently afflict young people despite the best efforts of psychology, medicine and social science, which are all disorder-focused. A scientific understanding of how to live life well may help to shift the focus from remediation to effective intervention.

Many before us have contemplated happiness and the good life, from Aristotle and Spinoza, to Jeremy Bentham and Abraham Maslow. In the UK, outstanding recent contributions have been made by the social psychologist Michael Argyle in his work on happiness, by the psychiatrist Michael Rutter with his developmental studies of psychological resilience, and by economists Amartya Sen and Partha Dasgupta on the importance of nurturing human and natural resources to increase well-being. Most of the recent developments, however, have come from the USA, and this is reflected in our high proportion of American contributors who are acclaimed for their innovative work in the field.

It was our intention that a meeting held at an early stage in the development of this field in the UK would attract a fresh body of first-rate researchers. We anticipated that the impact of the scientific study of well-being would also reach well beyond basic research. Our society's scientists, educators, citizens and leaders would all benefit greatly from knowing how individuals and communities can thrive and flourish. By contrast, policies that focus on survival and damage limitation lead to a tragic waste of individual and national potential. It is promising that governments are beginning to identify well-being as a more pertinent goal

than Gross National Product, and that the British government and policymaking bodies are now actively considering ways to increase human capability, resilience and social capital. Their efforts will surely be enhanced if scientists can offer a deeper understanding of the mechanisms by which individual and social factors produce a range of positive outcomes.

2. THE QUESTIONS WE EXPLORED

Among the questions our meeting sought to answer were the following. Why do people seek happiness and fulfilment? What is the adaptive value of positive emotions? What is the relationship between positive emotions, good health, creativity and high achievement? What are the individual and social determinants of positive outcomes? What is the influence of early life factors on disease resistance and psychological resilience? What are the neurobiological processes that mediate the effects of psychological and social factors on health and capability? How can we characterize the types of societies and value systems that encourage well-being and excellence in individuals, organizations and communities?

3. OUR WORKING DEFINITION OF WELL-BEING

For the purposes of the Discussion Meeting, we defined well-being in broad terms as 'a positive and sustainable state that allows individuals, groups or nations to thrive and flourish'. This means that at the level of an individual, well-being refers to psychological, physical and social states that are distinctively positive. Positive *psychological* states are exemplified by emotions such as happiness and contentment, attitudes such as generosity and empathy, and mental processes such as cognitive capabilities, interest and motivation. Positive *physical* states are characterized by vitality and physical capabilities, while positive *social* states include satisfying social bonds and loving relationships. Our definition of well-being also encompasses human resilience—the ability to survive and thrive in the face of the setbacks inherent in the process of living.

4. MEASUREMENT OF WELL-BEING

One of the fundamental means by which science progresses is the necessity to measure the concepts we seek to understand. So a key challenge facing us is how to measure positive states. Subjective well-being is typically measured in social and economic surveys using simple questions about present happiness or general life satisfaction, while psychologists tend to use more comprehensive scales to capture the various dimensions of subjective well-being. One of the controversies currently raging in the field relates to the measurement of positive emotions. The issue is whe-

One contribution of 12 to a Discussion Meeting Issue 'The science of well-being: integrating neurobiology, psychology and social science'.

ther we can rely on people's self-reports of their subjective experiences or whether we need objective measures of behaviour. Recent developments in psychophysiology and neuroscience offer the prospect of developing objective measures such as specific patterns of brain activation, which are highly correlated with self-reported subjective states. However, some would argue that while brain scans and other objective measures are valuable for advancing our understanding of the anatomy and physiology of emotions, the subjective experiences themselves remain the 'gold standard' units of measurement.

5. WHY NOW?

With any significant development in science or culture, it is instructive to ask 'why now?' So why is there now such a surge of interest in happiness and well-being? This question presents us with an apparent paradox, because in many ways we have never had it so good. Many nations have more wealth than ever before, better access to education and health care, more travel and leisure opportunities, and a long period of relative peace. Yet, in this era of apparent plenty, many people seem to be generally dissatisfied with their life, and there are increasingly high rates of depression, crime and social disintegration. This widespread malaise is reflected in the predominant focus of social and biomedical sciences on dysfunction and pathology, and the tacit assumption that supports this approach is the belief that if we could only do away with the negatives, we and our world would be in good shape. It is for this very reason that we need a science of well-being, because living life well is not simply about moving from a state of disorder to a state of adequate function or 'getting by'. Our new science must be ambitious and must aim to increase health, happiness and high achievement in the majority of the population. For health is not simply the absence of disease, just as happiness is more than the lack of misery, and towering strengths cannot be fostered by putting all of our resources into the remediation of deficits. It is on this premise that our Discussion Meeting focused not on those with serious problems, but on understanding and improving the well-being of the great majority of our citizens and institutions. Judging by the recent interest shown in the popular media, there is a deep and pervasive demand for accessible information about how to live life

well. Only a genuinely *scientific* exploration of well-being can provide a source of trustworthy information to guide interventions.

6. OUR AIMS

Our specific aims were twofold: first, to bring together outstanding researchers and practitioners in this multi-disciplinary field, who could introduce us to the latest theoretical concepts and scientific evidence; second, to encourage both novice and established scientists to contribute to this new and promising endeavour. Advances in our understanding of well-being require a holistic, multi-disciplinary approach, and consequently we have included a wide range of exciting developments, some focusing on well-being at an individual level, others at a societal level. The presentations covered four broad domains: evolution and development; psychology; neuroscience and physiology; and social science.

Despite the diversity of the invited papers, it is clear that a fuller understanding of the causes and consequences of a state of well-being requires a far broader approach than we were able to offer on this occasion. For example some important areas, such as the role of nutrition and religious beliefs and practices, received only limited coverage. Other areas, such as the roles of exercise and the physical environment, including the contribution of the arts to human flourishing, were not addressed. Nevertheless, like the Discussion Meeting itself, we believe these Royal Society Proceedings offer a fine foundation and a powerful inspiration for future work on well-being, across diverse fields of research and practice.

Felicia A. Huppert¹

Nick Baylis²

Barry Keverne³

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¹Department of Psychiatry, University of Cambridge, Box 189, Addenbrooke's Hospital, Cambridge CB2 2QQ, UK

²Department of Social and Developmental Psychology, Faculty of Social and Political Sciences, University of Cambridge, Free School Lane, Cambridge CB2 3RQ, UK

³Department of Zoology, University of Cambridge, Downing Street, Cambridge CB2 3EJ, UK

MARNE L. ARTHAUD-DAY, JOSEPH C. RODE, CHRISTINE
H. MOONEY and JANET P. NEAR

THE SUBJECTIVE WELL-BEING CONSTRUCT: A TEST OF ITS CONVERGENT, DISCRIMINANT, AND FACTORIAL VALIDITY

(Accepted 20 December 2004)

ABSTRACT. Using structural equation modeling, we found empirical support for the prevailing theory that subjective well-being consists of three domains: (1) cognitive evaluations of one's life (i.e., life satisfaction or happiness); (2) positive affect; and (3) negative affect. Multiple indicators of satisfaction/happiness were shown to have strong convergent validity as well as discriminant validity from positive and negative affect. Positive and negative affect likewise exhibited discriminant validity from one another. At both the item and scale levels of analysis, we obtained an intercorrelated three-factor solution corresponding to the three proposed subjective well-being domains.

KEY WORDS: construct validation, factor structure, subjective well-being

INTRODUCTION

Over the last several years, psychologists and others have argued for a “positive psychology,” with an increased focus on investigating happiness and other positive emotions (e.g., Luthans, 2002). Rather than continue a more traditional focus on negative or dysfunctional forces in daily life, they argue that researchers should attempt to understand how to make life better. Among the topics that have received particular attention is subjective well-being and its relationship to life at work. For example, Luthans (2002) has suggested that it is important for researchers in organizational behavior to understand the interrelationships among well-being, job satisfaction, and work and nonwork conditions. Investigating such “positive” phenomena is feasible, however, only to the extent that researchers can agree on a conceptual definition and measurement strategy for a construct that has proven elusive.

Across multiple publications, Diener and colleagues have proposed that subjective well-being is a multidimensional construct consisting of three separate components: (1) the presence of positive affect; (2) the relative lack of negative affect; and (3) people's cognitive evaluations of their life circumstances (Diener et al., 1997). However, most existing research utilizes cognitive and affective scales interchangeably, as equivalent proxies for overall well-being, suggesting it is unidimensional in nature. In an attempt to resolve this contradiction, we provide a comprehensive examination of the dimensionality of the subjective well-being construct by testing: (1) the convergent and discriminant validity of multiple measures of the proposed component factors; and (2) the overall factor structure. Specifically, we ask whether a one-factor (overall well-being), two-factor (cognition and affect) or three-factor (cognition, positive affect, and negative affect) structure best fits the data. To our knowledge, this is the first study to simultaneously consider the convergent, discriminant, and factorial validity of subjective well-being utilizing structural equation modeling techniques in three large samples (897 students, 731 students, and 1799 U.S. respondents).

THEORETICAL DEVELOPMENT

Cognition Versus Affect

As early as 1976, Andrews and Withey noted that individuals' assessments of their lives involves "both a cognitive evaluation and some degree of positive and/or negative feeling, i.e., 'affect'" (1976, p. 18). This simple observation placed well-being research squarely in the midst of an ongoing psychological debate regarding the relative independence versus interrelationship of cognition and affect. The psychological literature in this area is well developed and beyond the scope of this paper, but a simple comparison between the expression and experience of emotion may serve to illustrate the nature of the problem: A person may *express* an emotion, by involuntarily responding to a stimulus (e.g., large noise, extreme heat, or alcoholic intake), without an accompanying cognitive process; thus emotion and cognition may occur independently of one another. The *experience* of an emotion, however, necessarily implies some form of self-perception or cognition that interprets what emotion is being felt

(Zajonc et al., 1982); in this case, cognition and emotion are interconnected and interact with one another. Zajonc (1980) reconciles this paradox by explaining that “affect and cognition are under the control of separate and partially independent systems that can influence each other in a variety of ways, and that both constitute independent sources of effects in information processing” (1980, p. 151).

Subjective well-being research is by definition interested in the *experience* of life and its emotions – not their mere expression. The nearly exclusive use of self-report assessment tools (Diener, 1994) means that both affect and cognition are involved at some level (Andrews and McKennell, 1980; Horley and Little, 1985; Larsen et al., 1985). The very nature of the question (e.g., “How satisfied/happy are you with your life?”) demands a cognitive evaluation, yet what people are evaluating is their overall life experiences, which are laden with emotion (Organ and Near, 1985; Crooker and Near, 1998). Our purpose is to examine whether cognition and affect are so interrelated as to be indistinguishable from one another (i.e., one overall factor), or whether they do in fact constitute separate domains of well-being. To phrase this differently, do “cognitive” measures that ask respondents to report on their general level of happiness/life satisfaction encapsulate the affect component sufficiently, or is it necessary to include specific affect measures in order to comprehensively assess both components of an individual’s subjective well-being? A one-factor solution would suggest sufficient overlap among affective and cognitive components, such that using cognitive scales alone would allow researchers to measure both components implicitly. If a two- or three-factor solution shows better fit than a one-factor solution, then subjective well-being is best viewed as a multidimensional construct and should be measured accordingly.

Scales have been developed to measure both cognition and affect, although their interaction in human thought processes makes a “pure” self-report measure of either unlikely. On the cognitive side, the past 30 years has seen the development of multiple questionnaires, including the Life-3 Delighted-Terrible Scale (Andrews and Withey, 1976), Well-Being Index (Campbell et al., 1976), and the Satisfaction with Life Scale (Diener et al., 1985). The item and response scale wordings span the happiness/satisfaction spectrum,

but these scales intercorrelate highly with one another and show convergent validity (e.g., Andrews & Crandall, 1976; Diener et al., 1985; Larsen et al., 1985; Fordyce, 1988). Researchers have created a separate series of scales designed to measure affect – the frequency or intensity of experienced emotions over time. Examples include the widely used Bradburn (1969) Affect Balance Scale and the Positive and Negative Affect Scale developed by Watson et al. (1988). These affectively oriented scales have likewise demonstrated convergent validity amongst themselves (Watson et al., 1988).

Independence of Positive and Negative Affect

Bradburn (1969) was one of the first to report that positive and negative affect vary independently, rather than being bipolar opposites on the same affect spectrum (i.e., affect is bidimensional). This suggested that positive and negative affect are produced by different processes and exhibit different degrees of relationship with other variables. Subsequent studies have supported this finding, and underscore the importance of assessing positive and negative affect separately (Zevon and Tellegen, 1982; Warr et al., 1983; Diener and Emmons, 1985; Watson and Tellegen, 1985; Clark and Watson, 1988; Watson, 1988; Watson et al., 1988; Diener and Lucas, 2000). However, other researchers have continued to report a strong, inverse correlation between positive and negative affect (i.e., affect is unidimensional; Benin et al., 1988; Diener et al., 1995). For example, Green et al. (1993) found the correlation between positive and negative affect to be strongly negative (-0.85 to -0.92), controlling for random measurement error using structural equation modeling (Diener & Lucas, 2000).

Attempts to explain these contradictory results have generally followed one of two trajectories: attention to the differences between affect measurement scales and/or an analysis of the underlying components of affect. For example, Watson et al. (1988) reviewed studies using the Bradburn and other affect measures, and generally found these scales to have questionable reliability and validity. This prompted them to develop and validate their own Positive and Negative Affect Scale (PANAS), with which they reaffirmed the independence of positive and negative affect. Diener and colleagues, in contrast, examined various underlying aspects of affect, and found

that the relationship between positive and negative affect depended on time frame (Diener and Emmons, 1985), and the interaction between affect intensity and frequency (Diener et al., 1985). They reported that the frequency and intensity of affect varied independently, resulting in low average levels of correlation between positive and negative affect, but that a strong inverse relationship was evident when the effects of affect intensity were partialled out. Thus, the relationship between positive and negative affect is neither “truly inverse and linear” (Diener and Iran-Nejad, 1986) nor “strictly orthogonal” (Diener et al., 1995), but on average, positive and negative affect may be distinguished separately.

The “Tripartite Theory” of Subjective Well-Being

Based on these findings, Diener and colleagues proposed that subjective well-being consists of three components: (1) the presence of positive affect; (2) the relative lack of negative affect; and (3) people’s cognitive evaluations of their life circumstances (Diener et al., 1997). Recognizing the mixed semantic nature of many of the existing well-being scales, they developed and validated the Satisfaction with Life Scale (Diener et al., 1985; Diener et al., 1991; Pavot et al., 1991; Pavot & Diener, 1993; Sandvik et al., 1993; Lucas et al., 1996), to serve as a more purely cognitive measure of well-being. In scale validation studies, they confirmed the convergent validity of the Satisfaction with Life Scale with other satisfaction/happiness measures as well as its discriminant validity from positive and negative affect (Lucas et al., 1996). However, they have done so largely using correlational statistics in small or moderately sized samples. In this study, we replicate their correlational results in multiple large samples, including a nationally representative U.S. sample, and then test them more extensively through the use of structural equation modeling.

We hypothesize that indicators of the same well-being domain (i.e., cognition, positive affect, and negative affect) should show convergent validity with one another, while indicators of different domains demonstrate discriminant validity. Next, we explicitly test Diener’s theory that subjective well-being consists of three intercorrelated first-order factors by examining whether a one- (overall well-being), two- (cognition and affect), or three- (cognition, positive affect, negative affect) factor model provides the best fit to the data.

DESCRIPTION OF THE THREE SAMPLES

Student Sample 1

Subjects ($n = 880$, item level; $n = 897$, scale level) were enrolled in a required undergraduate class on organizational behavior at a large Midwestern university and received class credit for completing five on-line surveys. Most were male (57%), U.S. citizens of European descent (79%), and juniors in college (72%). The mean age was 20.7 years.

Student Sample 2

The next semester, we collected data from a second sample ($n = 731$) using the same procedures. Again, most students were male (57%), U.S. citizens of European descent (78%), and juniors in college (74%), with a mean age of 20.8 years. We considered undergraduate students an appropriate population for this validation study based on their relatively homogeneous demographic characteristics (Oishi et al., 1999). Administration of multiple measures of the same constructs to two similar, large samples provided for the most conservative test of discriminant validity. We controlled for common method effects by administering the surveys at different times, rather than all at once. Exploratory factor analyses revealed multiple distinct factors (as opposed to a single factor) at both the item and scale (student sample 1 only) level, indicating that method effects were not responsible for the majority of the observed covariance (Podsakoff and Organ, 1986). Additionally, prior well-being research has indicated that social desirability is a “substantive personality characteristic which enhances well-being” (Diener et al., 1991, p. 35), and not a response artifact or source of error variance that requires statistical control.

U.S. Sample

We cross-validated the student sample results using the U.S. dataset from the second wave of the World Values Survey (1990–1993), available from the Inter-University Consortium for Political and Social Research. The World Values Study Group (1999) interviewed

a representative national sample of 1839 U.S. adults ($n = 1799$ cases with complete data). The sample was randomly stratified by race, with minorities overrepresented. Although the World Values Survey data are from an earlier time period, we were not concerned about comparing data from two points in time. Extensive analysis has shown that happiness and life satisfaction are mostly stable over time for a given culture (Veenhoven, 1986).

MEASURES FOR THE THREE SAMPLES

Self-report measures such as the ones used in this study are the most direct method of assessing respondents' thoughts and feelings about their lives (Andrews and Crandall, 1976; Pavot and Diener, 1993). Many of the same self-report measures correlate with non-self-report measures (Sandvik et al., 1993) and appear to be valid tools for measuring subjective well-being.

Student Sample 1

NLS happiness item

The NLS happiness item is a variant of a survey question developed by Gurin, et al. (1960), and subsequently incorporated by the National Opinion Research Center into multiple large-scale social surveys (Andrews and Robinson, 1991). In our study, the item stem ("Taken all together, how would you say things are these days") was followed by a Likert scale ranging from 1 (very happy) to 4 (very unhappy), recoded so that higher values indicated higher levels of happiness. As a single-item measure with a restricted response range, the NLS happiness item tends to be more sensitive to contextual effects and item placement than its multi-item counterparts (Larsen et al., 1985; Pavot and Diener, 1993), but it has nevertheless demonstrated adequate reliability and validity (Pavot and Diener, 1993).

Life-3 delighted-terrible scale

Another widely used measure is the Life-3 delighted-terrible scale developed by Andrews and Withey (1976). We asked respondents to indicate how they felt about their life as a whole, ranging from 1 (terrible) to 7 (delighted). In its original form, the scale also permitted

respondents to select “neutral,” “never thought about it,” or “does not apply.” For analysis purposes, we recoded any “neutral” responses as “mixed” (scale midpoint = 4), and treated the other two categories as missing data points. The delighted-terrible scale has been shown to capture approximately 65% valid variance, and has been subjected to thorough reliability and validity testing by its authors (Andrews and Withey, 1976).

Well-being index

The Campbell et al. (1976) well-being index consists of an overall life satisfaction item (“How satisfied or dissatisfied are you with your life as a whole?”) and a series of eight semantic differential responses to the question: “Overall, how would you rate your life these days?” The well-being index has been shown to have adequate reliability and validity in prior research (Larsen et al., 1985). All items utilized a seven-point scale, recoded so that higher values indicated higher levels of well-being ($\alpha = 0.92$). For this index, the semantic differential questions are averaged to create an overall index (weight = 1), which is then averaged with the overall satisfaction item (weight = 1.1) to create the composite index score.

Satisfaction with life scale

We measured life satisfaction using the five-item satisfaction with life scale (Diener et al., 1985). The reliability and validity of this measure has been demonstrated in prior studies (e.g., Larsen et al., 1985; Pavot et al., 1991; Lucas et al., 1996). A sample item was, “I am satisfied with the conditions of my life.” Each item was rated using a seven-point Likert scale, and then recoded as needed (higher scores = higher life satisfaction), so that an average scale score could be computed ($\alpha = 0.82$).

PANAS short-term

The Positive Affect and Negative Affect Scales (PANAS) were expressly designed to compensate for the low reliability and poor convergent and/or discriminant validity of other affect measures (Watson et al., 1988). We used the short-term version to measure state-mood by asking respondents to indicate the degree to which they were feeling a list of 20 emotions (10 positive/10 negative) *at the present moment*, using a five point Likert scale; the respective item

scores were then averaged to create scale scores. Sample positive affect items ($\alpha = 0.88$) included “alert,” “proud,” and “interested,” whereas sample negative affect items included “hostile,” “upset,” and “nervous” ($\alpha = 0.84$). Due to a clerical error, one item (“strong”) was inadvertently omitted from the survey; thus, short-term positive affect was calculated as an average of nine instead of ten items.

Long-term affect

Instead of repeating the PANAS scales for long-term affect, we utilized the high positive and negative affect scales developed by Huelsman et al., (1998) to gain more precise measurement. The authors submitted items from the PANAS (Watson et al., 1988), Job Affect Scale (Burke et al., 1989), Mood Adjective Check List (recounted by Nowlis, 1965), the Activation-Deactivation Adjective Check List (Thayer, 1986), and the Affective Lexicon (Clore et al., 1987), to principal components and confirmatory factor analysis, and derived two discriminant sets of adjectives to measure high positive and negative affect. Four PANAS items (one positive affect, three negative affect) were included in the final version (Huelsman et al., 1998), resulting in partial overlap with the PANAS short-term items. Respondents indicated the extent to which they generally felt each affect item on a five-point Likert scale ($\alpha = 0.75$ for high positive affect; $\alpha = 0.85$ for high negative affect), from which we computed average scale scores.

Bradburn (1969) affect scale

This scale consists of five positive affect items (e.g., “particularly excited”) and five negative affect items (e.g., “depressed or very unhappy”), which were averaged to create scale scores. We asked respondents whether they had experienced each feeling during the past weeks (0 = “No”; 1 = “Yes”). The scale’s reliability has been questioned (e.g., Larsen et al., 1985), but we included it based on its prevalence in prior research ($\alpha = 0.64$ for positive affect; $\alpha = 0.55$ for negative affect).

Student Sample 2

Measures utilized in the second student sample included the satisfaction with life scale ($\alpha = 0.86$; Diener et al., 1985) and the long-

term affect scales ($\alpha = 0.76$ for high positive affect; $\alpha = 0.84$ for high negative affect) developed by Huelsman et al. (1998).

U.S. Sample

Two World Values Survey items served as indicators of the cognitive dimension. The first question asked respondents to indicate how happy they were “taking all things together” (4-point Likert scale), and the second asked people to indicate how satisfied they were with their “life as a whole these days” (10-point Likert scale). The World Values Survey also contained Bradburn’s (1969) affect scale ($\alpha = 0.64$ for positive affect; $\alpha = 0.62$ for negative affect). The importance of cross-validating our student data against a nationally representative sample outweighed any concerns over the psychometric properties of the Bradburn (1969) scale.

RESULTS

We assessed the convergent and discriminant validity of the subjective well-being construct utilizing descriptive statistics, bivariate correlations, scale reliabilities (when applicable), and confirmatory factor analysis. We assessed factor structure using covariance structure modeling. First we examined the data at the item level, to examine whether the proposed factor structure held utilizing a minimal number of measures. Studies of subjective well-being in relationship to other constructs tend to be more constrained in terms of survey length, such that efficiency as well as quality of measurement is of paramount concern. Next we examined the data at the scale level to validate the individual-level results, as aggregate data have several potential psychometric advantages (see discussion in Limitations).

Item-Level Analyses

Item-level analyses for the two student samples included the five items from the satisfaction with life scale (Diener et al., 1985), four high positive affect items (Huelsenman et al., 1998), and six high negative affect items (Huelsenman et al., 1998). Although additional items and scales were available for the first student sample, we address those

measures in the scale-level analyses only. This permitted us to examine the replicability of an identical item-level measurement model across two samples from the same population.

The World Values Survey items included a happiness question, a life satisfaction question, and the ten items (five positive, five negative) from the Bradburn (1969) affect balance scale. Including this sample permitted us to examine whether item level results were robust across both different scales and a different (nationally representative) sample.

Descriptive statistics

To conserve table space, means, standard deviations, and bivariate correlations for the individual items in each of the three samples are not listed but are available upon request. Across both student samples, items from each of the three scales (satisfaction with life, high positive affect, and high negative affect) displayed convergent validity with one another, and discriminant validity from the other dimensions. All intra-measure correlations were higher than any correlations between items from different measures.

We obtained largely the same results in the national U.S. sample. The happiness and life satisfaction items were more strongly correlated with one another than with any of the affect items. Likewise, the positive and negative affect items each displayed a high degree of internal consistency. Two positive affect items (“feel ‘going your way’” and “feel ‘top of the world’”) and two negative affect items (“feel lonely” and “feel depressed”) demonstrated higher than expected relationships with life satisfaction and happiness. These results are not altogether surprising given: (1) the hypothesized higher-order structure of the subjective well-being construct; and (2) the poorer psychometric properties of the Bradburn (1969) scale (e.g., Larsen et al., 1985).

We also examined correlations between demographic variables and life satisfaction, positive affect, and negative affect, respectively, in the U.S. sample only (Table I). Our respondents in the first two studies showed too little variance on demographic variables for us to find differential effects, but the third (nationally representative) sample varied considerably on demographic characteristics. We found that gender was correlated with both positive and negative affect, with women showing stronger affect than males, but gender was not significantly correlated with life satisfaction. Age was cor-

TABLE I

Correlations between demographic variables and the three factor scores, for national U.S. sample (WVS II data)

	<i>n</i>	Factor 1 Negative affect	Factor 2 Positive affect	Factor 3 Life satisfaction
Gender	1759	-0.08*	-0.05**	0.00
Age	1794	-0.12*	-0.17*	0.06**
Education	1587	-0.01	0.18*	0.06**
Socioeconomic status	1700	-0.13*	0.17*	0.17*
Income	1629	-0.08*	0.18*	0.15*
Community size	1742	0.02	-0.05	-0.07*

* $p < 0.01$ level (2-tailed).

** $p < 0.05$ level (2-tailed).

related with affect such that older people showed lower affect scores compared to younger respondents; however older respondents reported slightly higher life satisfaction than younger respondents. Education was positively correlated with positive affect and life satisfaction but uncorrelated with negative affect; we observed the same pattern for socioeconomic status or income. Finally, we conducted a one-way analysis of variance by ethnicity and found significant differences by ethnicity for positive affect ($F = 3.88, p < 0.002$) and life satisfaction only ($F = 3.80, p < 0.002$). Results of a post hoc Scheffé test showed that the significant differences were due to subgroup differences between African-Americans and European-Americans, with the latter experiencing higher levels of positive affect and life satisfaction. These differential associations with positive affect, negative affect, and life satisfaction support the discriminant validity of the three constructs, because different demographic groups seem to experience them all somewhat differently.¹

Reliability

The Cronbach's alphas for the first ($n = 880$) and second ($n = 731$) student samples were acceptable for the satisfaction with life (0.82 and 0.86), high positive affect (0.75 and 0.76), and high negative affect scales (0.85 and 0.84). The representative U.S. sample ($n = 1799$) alphas for the Bradburn (1969) scales were 0.64 (positive affect) and 0.62 (negative affect). With the exception of the Bradburn scales, all

of the multiple item measures met the minimum coefficient alpha cut-off of 0.70 for research purposes (Nunnally, 1967).

Confirmatory factor analysis

To further analyze the structure of subjective well-being at the item level, we performed confirmatory factor analyses (LISREL 8.54) on all three data samples. As the maximum likelihood method of estimation assumes multivariate normality (Byrne, 1998), we first examined the data for skewness and kurtosis. Typical of satisfaction/happiness data in American samples (e.g., Rice et al., 1980; Rain et al., 1991), several of our measures deviated from a normal distribution. We therefore transformed the data with the "Normal Scores" option in LISREL, and utilized the robust maximum likelihood method of estimation, which is less sensitive to distributional violations.

Due to the large sample size, which influences traditional χ^2 model fit statistics, we gauged model fit through the goodness of fit index (GFI; Joreskog and Sorbom, 1984), comparative fit index (CFI; Bentler, 1990), and the root mean squared error of approximation (RMSEA; Brown and Cudeck, 1993), as well as chi-square divided by the degrees of freedom (χ^2/df). GFI and CFI values in the mid .90s, RMSEA values less than 0.08, and χ^2/df values less than 3.0 are all considered indications of good model fit (Kline, 1998). We also included the Akaike information criterion (AIC; Akaike, 1987), which is designed to examine the relative fit of non-nested models, with a lower value indicating comparatively better fit.

In accordance with Diener's "tripartite" theory of subjective well-being, we first estimated a three-factor model, with the satisfaction/happiness, positive affect, and negative affect items loading onto their respective latent variables, which were allowed to inter-correlate. The fit indices for the student samples were as follows: χ^2 (87, $n = 880$) of 185.02 ($p < 0.001$) for sample 1 and χ^2 (87, $n = 731$) of 140.52 ($p < 0.001$) for sample 2, GFI (0.97/0.97), CFI (0.99/0.99), and RMSEA (0.04/0.03). Item factor loadings were all 0.44 or greater. All specified paths were significant at the 0.06 level or below (a few satisfaction with life scale items [1 in sample 1; 2 in sample 2] slightly exceeded the traditional p-value threshold of 0.05), including the correlations among the three first-order factors. The variance in common between the three latent constructs

(positive and negative affect = 0.05/0.09, cognition and positive affect = 0.20/0.18, and cognition and negative affect = 0.14/0.08) was less than the average variance explained across the indicators for each latent variable (cognition, mean = 0.48/0.55; positive affect, mean = 0.45/0.46; negative affect, mean = 0.49/0.47), demonstrating discriminant validity (Fornell and Larcker, 1981).

We next tested a two-factor (cognition and affect) and a one-factor (overall well-being) model to see if they provided acceptable fit to either data set. The RMSEA and AIC were 0.12/0.12 and 1281.80/1027.77 for the two-factor model, and 0.19/0.20 and 2843.66/2745.52 for the one-factor model, compared to 0.04/0.03 and 251.02/206.52 for the three-factor model, indicating a significant decrease in model fit. Factor loadings for the one-factor model are provided in Table II, with the two-factor model provided in Table III and the three-factor model in Table IV; the fit indices are provided in Table V.

Although the initial results for the U.S. sample also indicated adequate model fit, an examination of the residuals and modification indices suggested a significant correlation between two of the

TABLE II

Factor loadings for item-level covariance structure models of subjective well-being: one-factor model

	Student sample 1 (<i>n</i> = 880)	Student sample 2 (<i>n</i> = 731)
Satisfaction with life scale1	0.43	0.78
Satisfaction with life scale2	0.47	0.75
Satisfaction with life scale3	0.49	0.80
Satisfaction with life scale4	0.41	0.62
Satisfaction with life scale5	0.37	0.59
High negative affect1	-0.60	-0.31
High negative affect2	-0.69	-0.29
High negative affect3	-0.73	-0.39
High negative affect4	-0.72	-0.32
High negative affect5	-0.70	-0.38
High negative affect6	-0.49	-0.27
High positive affect1	0.33	0.43
High positive affect2	0.25	0.38
High positive affect3	0.05	0.22
High positive affect4	0.34	0.43

TABLE III

Factor loadings for item-level covariance structure models of subjective well-being: two-factor model

	Student sample 1 (<i>n</i> = 880)	Student sample 2 (<i>n</i> = 731)
<i>Cognition</i>		
Satisfaction with life scale1	0.75	0.85
Satisfaction with life scale2	0.77	0.80
Satisfaction with life scale3	0.76	0.81
Satisfaction with life scale4	0.62	0.61
Satisfaction with life scale5	0.54	0.60
<i>Affect</i>		
High negative affect1	0.64	0.57
High negative affect2	0.74	0.71
High negative affect3	0.73	0.71
High negative affect4	0.77	0.75
High negative affect5	0.76	0.78
High negative affect6	0.52	0.55
High positive affect1	−0.26	−0.34
High positive affect2	−0.18	−0.25
High positive affect3	0.01	−0.04
High positive affect4	−0.26	−0.33

error terms (“feel proud” and “feel pleased”). Correlations between the error terms of exogenous indicator variables suggest a common influence on the variables other than the factor they were designed to indicate, and are believed to have minimal effects on the integrity of the overall model (Kline, 1998). As these two items were both part of the Bradburn (1969) positive affect scale, we respecified the model with this additional parameter and the fit of the three-factor model improved slightly to: χ^2 (50, *n* = 1799) of 291.64 (*p* < 0.001), GFI (0.97), CFI (0.95), and RMSEA (0.05). Some of the factor loadings (see Table VI) were slightly weaker (≥ 0.30) compared to the student samples, but all paths except one (life satisfaction, *p* = 0.06) were significant at the 0.05 level or lower. The test for discriminant validity (Fornell and Larcker, 1981) was not as conclusive in this data set; only the variance shared by positive and negative affect (0.09; versus 0.48 [cognition and positive affect] and 0.36 [cognition and negative affect]) was consistently less than the average variance explained across the indicators for cognition

TABLE IV

Factor loadings for item-level covariance structure models of subjective well-being: three-factor model

	Student sample 1 (<i>n</i> = 880)	Student sample 2 (<i>n</i> = 731)
<i>Cognition</i>		
Satisfaction with life scale1	0.75	0.85
Satisfaction with life scale2	0.77	0.80
Satisfaction with life scale3	0.77	0.81
Satisfaction with life scale4	0.61	0.61
Satisfaction with life scale5	0.54	0.60
<i>Negative affect</i>		
High negative affect1	0.64	0.57
High negative affect2	0.76	0.73
High negative affect3	0.72	0.71
High negative affect4	0.78	0.76
High negative affect5	0.76	0.78
High negative affect6	0.53	0.55
<i>Positive affect</i>		
High positive affect1	0.79	0.78
High positive affect2	0.62	0.68
High positive affect3	0.44	0.46
High positive affect4	0.77	0.74

(0.42), positive affect (0.25), and negative affect (0.27), respectively. This was likely due to the poorer psychometric properties of the Bradburn (1969) affect scale (e.g., Larsen et al., 1985), the only affect measure available. Respecifying the model with either a two- or single-factor structure did not improve the fit. The fit indices and factor loadings for the U.S. sample models are provided in Tables V and VI, respectively.

Scale-Level Analyses

We completed scale-level analyses for the first student sample only, because the item-level analyses were virtually identical for the two samples, and scale-level analyses would have been similar as well. Only one measure per well-being dimension was available for the U.S. sample, so it was not a candidate for scale-level analyses. A total of four satisfaction/happiness scales, three positive affect scales, and

TABLE V
Fit indices for item-level covariance structure models

	Student sample 1	Student sample 2	U.S. sample
<i>One-factor model</i>			
χ^2/df	2783.66/90 = 30.93	2685.52/90 = 29.84	1252.34/53 = 23.63
Goodness of fit index (GFI)	0.66	0.63	0.89
Comparative fit index (CFI)	0.75	0.72	0.80
Root mean squared error of approximation (RMSEA)	0.19	0.20	0.11
Akaike's information criterion (AIC)	2843.66	2745.52	1302.34
<i>Two-factor model</i>			
χ^2/df	1219.80/89 = 13.71	965.77/89 = 10.85	1234.42/52 = 23.74
Goodness of fit index (GFI)	0.82	0.82	0.89
Comparative fit index (CFI)	0.88	0.89	0.81
Root mean squared error of approximation (RMSEA)	0.12	0.12	0.11
Akaike's information criterion (AIC)	1281.80	1027.77	1286.43
<i>Three-factor model</i>			
χ^2/df	185.02/87 = 2.13	140.52/87 = 1.62	291.64/50 = 5.83
Goodness of fit index (GFI)	0.97	0.97	0.97
Comparative fit index (CFI)	0.99	0.99	0.95
Root mean squared error of approximation (RMSEA)	0.04	0.03	0.05
Akaike's information criterion (AIC)	251.02	206.52	347.64
<i>n</i>	880	731	1799

TABLE VI
Factor loadings for item-level covariance structure models: U.S. sample (N = 1799)

Models	One-factor	Two-factor		Three-factor		
	Subjective well-being	Cognition	Affect	Cognition	Positive affect	Negative affect
Happy	0.48	0.51		0.51		
Life satisfaction	0.67	0.76		0.77		
Excited	0.22		0.22		0.38	
Proud	0.22		0.21		0.36	
Pleased	0.33		0.34		0.42	
Top of world	0.51		0.49		0.66	
Going your way	0.48		0.48		0.60	
Restless	-0.15		-0.16			0.30
Lonely	-0.50		-0.53			0.65
Bored	-0.40		-0.42			0.49
Depressed	-0.53		-0.56			0.69
Upset	-0.16		-0.18			0.31

three negative affect scales were administered to the first student sample.

Descriptive statistics

The means, standard deviations, and intercorrelations are shown in Table VII. All four satisfaction/happiness scales were positively intercorrelated (0.41 to 0.69, $p < 0.01$). High positive affect and short-term positive affect were positively correlated (0.45, $p < 0.01$), as were the high and short-term negative affect scales (0.59, $p < 0.01$). For these eight scales, all intra-construct correlations were stronger than the correlations between scales of different constructs.

As seen in prior research (e.g., Larsen et al., 1985), the Bradburn (1969) affect scales did not demonstrate the same degree of convergent (with other affect measures) and discriminant (with cognitive measures) validity. Bradburn positive affect was correlated with both high positive affect (0.30, $p < 0.01$) and short-term positive affect (0.25, $p < 0.01$), but was more strongly correlated with the cognitive measures (range 0.32 to 0.45, $p < 0.01$). The Bradburn negative affect scale was correlated with high negative affect (0.33, $p < 0.01$) and short-term negative affect (0.26, $p < 0.01$), but these correlations were not significantly larger than those with the cognitive scales (range -0.21 to -0.28 , $p < 0.01$).

Reliability

The reliabilities for all eight multiple-item scales are provided on the diagonal of Table VII. With the exception of the two Bradburn (1969) scales (positive affect $\alpha = 0.64$; negative affect $\alpha = 0.55$), all measures met the minimum coefficient alpha cut off of 0.70 for research purposes (Nunnally, 1967).

Confirmatory factor analysis

We performed a confirmatory factor analysis using scale scores as indicators of the latent well-being constructs. Analyzing scale scores is appropriate when the scales are based on established, theoretically determined, and reliable measurement instruments, and when the primary interest is in the relations among the latent constructs (Little, et al., 2002).

As with the item-level analyses, we began by estimating an inter-correlated three-factor model, with the satisfaction/happiness ($n = 4$),

TABLE VII

Means, standard deviations, Cronbach's alphas, and intercorrelations among subjective well-being scales (student sample 1, n = 897)

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1 NLS happiness	3.15	0.68										
2 Life-3 D-T scale	5.41	1.04	0.41									
3 Well-being index	11.52	1.79	0.49	0.60	(0.92)							
4 Satisfaction with life scale	5.13	1.04	0.42	0.56	0.69	(0.82)						
5 Bradburn positive affect	0.78	0.24	0.32	0.34	0.45	0.37	(0.64)					
6 Bradburn negative affect	0.54	0.28	-0.26	-0.23	-0.28	-0.21	0.85	(0.55)				
7 High positive affect	3.41	0.66	0.27	0.31	0.39	0.32	0.30	-0.11	(0.75)			
8 High negative affect	2.05	0.70	-0.32	-0.29	-0.40	-0.33	-0.20	0.33	-0.14	(0.85)		
9 Short-term PA (PANAS)	2.87	0.82	0.22	0.24	0.29	0.24	0.25	-0.13	0.45	-0.16	(0.88)	
10 Short-term NA (PANAS)	1.68	0.61	-0.26	-0.23	-0.30	-0.26	-0.12	0.26	-0.09	0.59	-0.02	(0.84)

Note: Correlations $> |0.10|$ are significant, $p < 0.01$; correlations $> |0.085|$ are significant, $p < 0.05$; Cronbach's alphas on diagonal, where applicable.

positive affect ($n = 3$), and negative affect ($n = 3$) scales loading onto their respective factors. An examination of the residuals and modification indices suggested a significant correlation between the error terms of the two Bradburn (1969) scales (likely due to a methods effect [unique response scale]), as well as short-term and high positive affect (likely due to the overlap of three items). We respecified the model accordingly, and obtained the following fit indices (see Table VIII): χ^2 (30, $n = 897$) of 64.31 ($p < 0.001$), GFI (0.99), CFI (0.99), and RMSEA (0.04). All but one of the specified paths were significant at the 0.05 level or below (well-being index, $p = 0.06$; see Table IX for factor loadings). Notably, the well-being index has the strongest affective component (the eight semantic differential items comprise approximately one-half of the overall index score) of all the happiness/life satisfaction scales utilized. However, the variance in common between the three latent constructs (positive and negative affect = 0.12; cognition and positive affect = 0.72; and cognition and negative affect = 0.30) was not consistently less than the average variance explained across the indicators for each construct (cognition, mean = 0.55; positive affect, mean = 0.27; negative affect, mean = 0.45).

Given the poor psychometric properties of the Bradburn (1969) scales, we therefore retested the proposed model excluding them from the analysis. Without the Bradburn scales, no additional modifications were required to the model. The fit indices improved slightly: χ^2 (17, $n = 897$) of 33.27 ($p = 0.01$), GFI (0.99), CFI (0.99), and RMSEA (0.03), and all paths but one (well-being index, $p = 0.06$) were again significant at the 0.05 level or below. This time, the variance in common between the three latent constructs (positive and negative affect = 0.04, cognition and positive affect = 0.32, and cognition and negative affect = 0.27) was less than the average variance explained across the indicators for each construct (cognition, mean = 0.55; positive affect, mean = 0.47; negative affect, mean = 0.61), providing confirmation of discriminant validity at the scale level (Fornell and Larcker, 1981).

As with the item-level data, we respecified the model with a one- and two-factor structure, but model fit was significantly reduced (see Table VIII). The intercorrelated three-factor solution provided the best fit, supporting the “tripartite” theory of subjective well-being.

TABLE VIII
Fit indices for scale-level covariance structure models (student sample 1, $n = 897$)

	One-factor model		Two-factor model		Three-factor model	
	With Bradburn	Without Bradburn	With Bradburn	Without Bradburn	With Bradburn	Without Bradburn
χ^2/df	345.71/33 = 10.48	349.56/20 = 17.48	331.60/32 = 10.36	359.22/19 = 18.91	64.31/30 = 2.14	33.27/17 = 1.96
Goodness of fit index (GFI)	0.92	0.90	0.93	0.90	0.99	0.99
Comparative fit index (CFI)	0.92	0.88	0.93	0.90	0.99	0.99
Root mean squared error of approximation (RMSEA)	0.10	0.14	0.10	0.14	0.04	0.03
Akaike's information criterion (AIC)	389.71	381.56	377.60	393.22	114.31	71.27

TABLE IX

Factor loadings for scale-level covariance structure models, student sample 1
($n = 897$)

	With Bradburn	Without Bradburn
<i>One-factor model</i>		
Subjective well-being		
NLS happiness	0.59	0.58
Delighted-terrible scale	0.69	0.70
Satisfaction with life scale	0.76	0.77
Well-being index	0.87	0.87
Short-term positive affect	0.34	0.36
High positive affect	0.44	0.45
Bradburn positive affect	0.51	
Short-term negative affect	-0.39	-0.38
High negative affect	-0.49	-0.48
Bradburn negative affect	-0.35	
<i>Two-factor model</i>		
Cognition		
NLS happiness	0.58	0.57
Delighted-terrible scale	0.70	0.70
Satisfaction with life scale	0.77	0.78
Well-being index	0.88	0.87
Affect		
Short-term positive affect	0.35	0.24
High positive affect	0.43	0.27
Bradburn positive affect	0.52	
Short-term negative affect	-0.48	-0.67
High negative affect	-0.59	-0.81
Bradburn negative affect	-0.42	
<i>Three-factor model</i>		
Cognition		
NLS happiness	0.58	0.57
Delighted-terrible scale	0.70	0.70
Satisfaction with life scale	0.77	0.78
Well-being index	0.88	0.88
Positive affect		
Short-term positive affect	0.40	0.59
High positive affect	0.52	0.77
Bradburn positive affect	0.62	
Negative affect		
Short-term negative affect	0.69	0.68
High negative affect	0.84	0.87
Bradburn negative affect	0.40	

TABLE X
Correlations between well-being dimensions and higher order factor loadings

Model	Student sample 1 ^a (Item, <i>n</i> = 880)	Student sample 2 ^a (Item, <i>n</i> = 731)	U.S. sample ^a (Item, <i>n</i> = 1799)	Student sample 1 ^{a,b} (Scale, <i>n</i> = 897)
Two-factor				
	Cognition & affect	-0.41	0.83	0.60
Three-factor				
	Cognition & positive affect	0.45	0.69	0.57
	Cognition & negative affect	-0.38	-0.60	-0.52
	Positive & negative affect	-0.23	-0.30	-0.21
Higher-order factor ^c				
	Subjective well-being & cognition	0.77	0.41	0.46
	Subjective well-being & positive affect	0.33	0.19	0.23
	Subjective well-being & negative affect	-0.30	-0.14	-0.18

^aTo get the higher-order models to converge, one of the regression coefficients for each first-order latent variable was scaled to 1.00.

^bScale level results are from the model without the Bradburn affect scales.

^cThe three-factor correlated model and the higher order model containing three first-order factors are mathematically equivalent and will therefore yield the same fit statistics.

Higher-Order Factor Structure

As a supplementary analysis, we respecified each of the intercorrelated three-factor models (item level: student sample 1, student sample 2, U.S. sample; scale level: student sample 1) with subjective well-being as a higher order factor predicting the three first-order factors of cognition, positive affect, and negative affect. Specifying a higher order factor forces LISREL to convert the correlation between factors into factor loadings, but otherwise the models are mathematically equivalent. A second-order factor with three first-order factors is by definition just identified; as a result, the fit statistics reflect the first-order structure only (and therefore do not change). In order for the fit indices to reflect both model levels, an additional constraint would need to be placed on the relationship between the latent variables (Rindskopf and Rose, 1988). We knew of no theory or pre-existing studies that would justify such a constraint, and therefore provide the just-identified model results for illustrative purposes only (see Table X). The signs and patterns of relationships between the latent variables are remarkably consistent across all samples and levels of analyses, with one exception. In the two-factor model, the correlation between cognition and affect is negative in the item-level student samples, but positive in the U.S. sample and the scale level results for student sample 1.

DISCUSSION

To our knowledge, this was the first study to test empirically the construct validity of subjective well-being at both the item and scale levels of analysis. In addition, we were able to test the discriminant and convergent validity of the subjective well-being dimensions more comprehensively than had been possible in the past, using both correlation analysis and factor analysis. Previous studies have relied upon smaller samples, which prevented full multivariate analysis of the depth used here. At the item level, the proposed three-factor structure provided the best fit to the data across two student samples ($n = 880$ and $n = 731$) and a nationally representative U.S. sample ($n = 1799$). These results were consistent across

different measures for both cognition (satisfaction with life scale [student samples] and happiness and life satisfaction items [U.S. sample]) and affect (high positive and negative affect scales [student samples] and the Bradburn affect scale [U.S. sample]), as well as across different time periods (the representative U.S. sample predated the student data by 10 years). Further, the consistency between the student and the U.S. sample results, in spite of using different measures, confirms that students are a reasonable sample in which to study subjective well-being.

The scale-level results also confirmed the three-factor structure of subjective well-being. These findings are significant because aggregate-level data have several potential psychometric advantages over item-level data, including: higher reliability, higher communality, larger ratio of common-to-unique factor variance, and decreased likelihood of distributional violations (Little et al., 2002, p. 154). Additionally, Little et al. (2002, p. 155) note that models based on scale-level data: (1) tend to be more parsimonious (i.e., fewer estimated parameters); (2) are less likely to have correlated residuals or cross-loadings; and (3) tend to have reduced sources of sampling error (MacCallum, et al., 1999).

In summary, we found that a three-factor model showed better fit than a one- or two-factor model. Diener and colleagues have argued repeatedly that subjective well-being should be measured through three separate components. Our research provides empirical support for the view that these three components are separate and independent from one another, using larger samples and stronger statistical tests than have been feasible with earlier data sets. Our research also provides empirical support for the view that cognitive and affective measures differ significantly from one another, as the life satisfaction factor was consistently independent from the two affect factors. If we had found evidence of a strong one-factor solution, this might have indicated that a measure of life satisfaction/happiness could encapsulate the emotional tone of the two affective measures – and that perhaps one measure would have been sufficient to measure subjective well-being. Instead, our results indicate that future studies of subjective well-being should include both a cognitively oriented scale and an affect scale that measures positive and negative affect independently.

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

Additional studies will be necessary to determine whether our scale-level results generalize to nonstudent samples and over non-self-report measures of well-being. We elected to utilize a student sample because the homogeneity of the population provided a more stringent test of discriminant validity. Using self-report data allowed us to compare our results directly with existing literature, which has relied primarily on self-report assessment. We felt that the benefits of these choices outweighed the potential disadvantages.

Based on our results, certain scales may prove more useful than others in future research endeavors. Among the cognitive measures, the well-being index (Campbell et al., 1976) and satisfaction with life scale (i.e., the two multi-item scales; Diener et al., 1985) demonstrated high reliability and the strongest factor loadings. With respect to affect, either the PANAS or the high positive and negative affect dimension scales created by Huelsman et al. (1998) appeared to function adequately. Although the PANAS loadings were somewhat lower, it is important to note that we used the short-term mood version, which tends to be more responsive to recent life events than long-term affect (Diener, 1994). The Bradburn (1969) scale displayed relatively weaker psychometric properties.

Future research should also take changes in well-being over time into consideration. Our study was cross-sectional in nature; we could not examine the interrelationships of the three domains across various time periods, nor could we determine the presence of any causal relationships between cognition and affect, within the subjective well-being construct. Speaking with reference to the broader field of cognitive psychology, Simon (1982, p. 337) has noted that there are "two-directional causal paths between affect and cognition." The notion of causal interrelationships between the dimensions of subjective well-being could have significant implications for the field that are as yet largely unexplored.

Our study supports the prevailing theory that subjective well-being consists of three interrelated yet distinct components: cognitive evaluation (happiness/satisfaction), positive affect, and negative affect. Previously, researchers have measured well-being interchangeably using either satisfaction/happiness or affect scales. Our analyses,

however, suggest that cognitive and affective measures of well-being are not equivalent, and that measuring one without the other may ignore significant interactions between the two, potentially skewing the results. For example, how would we rate the subjective well-being of an individual who expressed high life satisfaction but low positive affect and high negative affect? Alternatively, how would we rate the subjective well-being of an individual who expressed low life satisfaction but high positive affect and low negative affect? Furthermore, other constructs (e.g., personality) tend to relate differently to each of the three well-being dimensions, such that important relationships might be overlooked if satisfaction/happiness, positive affect, and negative affect are not considered simultaneously.

This has implications for theory as well as measurement because it means that subjective well-being is a multidimensional construct far more complex than previously suggested by cognitive (or affective) measures alone. If life satisfaction is part of an overall well-being construct, then it follows that domain satisfaction measures (e.g., job satisfaction) may likewise form part of a more comprehensive “domain well-being” construct, that takes both cognition and affect into consideration. The failure to take affect into account may be responsible, at least in part, for the conflicting results in studies of the relationship between job satisfaction and job performance (e.g., Judge et al., 2001). In summary, while we support the call for greater focus on “positive psychology,” such research can be properly undertaken only when an appropriate measurement strategy has been developed, including both cognitive and affective measures.

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NOTES

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Zevon, M. A. and A. Tellegen: 1982, 'The structure of mood change: An idiographic/nomothetic analysis', *Journal of Personality and Social Psychology* 43(1), pp. 111–122.

Indiana University
E-mail: marthaud@indiana.edu

Marne L. Arthaud-Day

Miami University of Ohio
E-mail: rodejc@muohio.edu

Joseph C. Rode

Indiana University
E-mail: chmooney@indiana.edu

Christine H. Mooney

Kelley School of Business
Indiana University
1309 East 10th Street
Bloomington, IN 47405-1701
Email: near@indiana.edu

Janet P. Near



Cognitive, affective and contextual predictors of subjective wellbeing

Iolanda Costa Galinha · José Luís Pais-Ribeiro

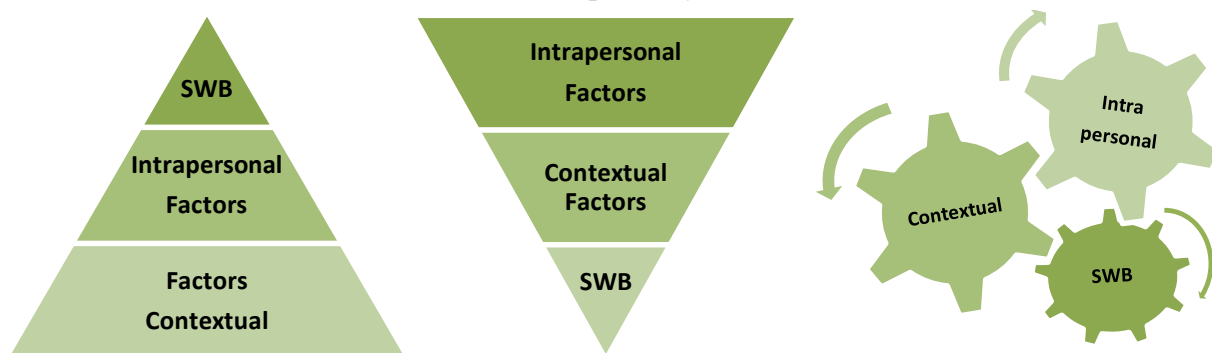
Abstract: The article analyses the prediction of cognitive, affective and contextual factors to Subjective Wellbeing (SWB). Four different components of SWB were used in order to identify its different predictors. A sample of 303 adult students was collected and reassessed over a two-month interval. Seven instruments were used to measure: Global Subjective Wellbeing; Satisfaction with Life in Domains; Positive and Negative State Affect; Positive and Negative Trait Affect; Standards of Comparison; Depression, Anxiety and Stress; Life Events; and Socio-Demographic variables. Results indicated that Global SWB is predicted by Satisfaction with Life in Domains, and Positive and Negative State Affect. The cognitive dimension of SWB is predicted by Depression, Comparison Standards, State and Trait Affect, and several contextual variables. The affective dimension of SWB is predicted by Trait Affect, Depression, Anxiety, and the contextual variable of educational status. Results also indicated that intrapersonal variables are the main predictors of SWB, however contextual variables are also significant predictors. Each component of SWB (global, cognitive & affective) shows different predictors, stressing the importance of analysing and reporting separately the results of each component. Among the predictors of SWB over a two-month interval, state affective variables and contextual variables lose prediction power, while trait affective and cognitive variables gain prediction power.

Keywords: subjective wellbeing; satisfaction with life; positive and negative affect; predictors

1. Introduction

One of the main goals of scientific research in the field of Subjective Wellbeing (SWB) has been to identify the main predictors of human happiness. In the preceding decades, researchers have tried to address the question regarding the main associates of SWB through different approaches: *bottom up* (emphasising the importance of contextual factors), *top down* (emphasising the importance of intrapersonal factors), and *integrative* (emphasising the dynamic contribution of intrapersonal & contextual factors, see Figure 1).

Figure 1. Representation of *bottom up*, *top down* and *integrative* theoretical models of SWB, respectively



However, most studies have not analysed the impact of the different factors combined, and therefore have not determined the relative contribution of each factor to SWB. Researchers defended the importance of analysing several predictors of SWB together, in order to identify the contribution of each above and beyond the others (Diener & Biswas-Diener, 2000). In this study we contribute to the literature by identifying the relative contribution of several cognitive, affective and contextual factors to SWB. The aim of the present study is to identify which perspective – *bottom up*, *top down* or *integrative* – is best supported.

Secondly, several studies on the associates of SWB have used only one measure of SWB, sometimes representing only one dimension of the concept (i.e., cognitive or affective). Several authors have suggested that different measures of SWB have different predictors, and have defended the importance of using several measures of SWB in order to fully understand the phenomenon (Diener, 2000; 2006; Schwarz & Strack, 1999; Sirgy, 2002). In this study we use several measures of SWB – global, specific, cognitive and affective – and identify the main predictors of each measure.

Thirdly, most studies on the predictors of SWB are cross-sectional. Longitudinal studies are rare (Diener & Ryan, 2009) and are most frequently developed in six-month. Some studies have shown differences in the impact of the predictors of SWB in a present context, as well as within a six-month interval. Some studies indicate that contextual factors may be better predictors of SWB in the present, while intrapersonal trait factors may be important predictors of medium- and long-term SWB (Suh, Diener & Fujita, 1996). Could these differences be observed in shorter temporal intervals? In this study we contribute to the literature with data about the factors that best predict SWB in the present, and the factors that best predict SWB over a short-term interval of two months.

Subjective Wellbeing is accepted to be a broad concept, to have a cognitive and an affective dimension, separated and moderately correlated. The construct includes variables such as Satisfaction with Life as a Whole or in Specific Domains, and Positive Affect and Negative Affect (Arthaud-Day, Rode, Mooney & Near, 2005; Diener & Ryan, 2009; Galinha & Pais-Ribeiro, 2008). The concept of SWB can be assessed through different dimensions – cognitive and affective – and different levels of analysis – global and specific – depending on the instruments used; see Table 1 (Diener, 2006; Sirgy, 2002).

Table 1: Levels of analysis of Subjective Wellbeing

	Cognitive	Affective
Global	Global Life Satisfaction	Global Happiness
Specific	Satisfaction with Life in Domains	Positive State Affect Negative State Affect

The study of the associates of SWB has been developed in three major stages with different characteristics and objectives (Diener & Biswas-Diener, 2000). A *bottom up* perspective influenced the first stage of studies on SWB. These studies mainly analysed the impact of contextual factors in the SWB of individuals. The main purpose of this stage was to identify the Socio-Demographic characteristics of happy people. From the *bottom up* perspective there is a major influence of external life circumstances (e.g. material conditions; life events; socio-political contexts) on the subjective experience of individuals. According to this perspective, adverse circumstances affect SWB (Brief, Butcher, George, & Link, 1993; Feist, Bodner, Jacobs, Miles, & Tan, 1995). However, one of the main findings of this phase was that contextual factors are not the most powerful in explaining the variability of SWB. In most studies, contextual factors such as Socio-Demographic variables and Life Events show only weak or short-term impacts in SWB. Some exceptions are also reported indicating that in some circumstances, contextual factors may have a strong and long-term impact on the SWB of individuals: a) when life conditions decline below a minimum level of satisfaction of human needs (Veenhoven, 1996); b) when some Life Events such as marriage and long-term unemployment are experienced (Helliwell, Barrington-Leigh, Harris, & Huang, 2009; Lucas, Clark, Georgellis, & Diener, 2004); and c) when systematic differences in SWB are observed between poor and rich countries, showing the poorer countries as the least happy in the world (Farid & Lazarus, 2008; Inglehart & Klingemann, 2000).

In the second stage of research about the predictors of SWB there was a development of theoretical models and an emphasis on analysing the contribution of intrapersonal factors to SWB, such as temperament, social comparison, the goal-achievement gap and adaptation (Diener & Biswas-Diener, 2000). A *top down* perspective influenced the studies of SWB in this stage. Studies tested the hypothesis that the intrapersonal (affective & cognitive) characteristics of individuals determine their SWB (Brief et al., 1993; Feist et al., 1995). Theories postulated that two persons in the same circumstances can evaluate their SWB in different ways. Results indicated that intrapersonal variables are stronger determinants of SWB than contextual factors (see Diener & Ryan, 2009; Diener, Suh, Lucas, & Smith, 1999 for a review). The *top down* perspective received support from empirical studies throughout the last few decades, placing personality and positive predisposition as main predictors of SWB (see Lucas, 2008 for a review).

Headey and Wearing (1992), however, questioned the validity of both *bottom up* and *top down* models *per se* and pointed out limitations in both. They suggested that both contextual and intrapersonal factors have an impact on SWB. Nevertheless, after a period of time the impact of contextual factors (e.g. Life Events) on SWB decreases and individuals return to their original level of SWB, as determined by intrapersonal factors (e.g. personality). Classical and current studies support this rationale and show that through the effect of time, people adapt to

the impact of major Life Events and Socio-Demographic changes (Bonanno, Moskowitz, Papa, & Folkman, 2005; Lowenstein & Frederick, 1999; Silver & Wortman, 1980). Suh, Diener and Fujita (1996) concluded that life events and personality differ in the duration of their effects on SWB. Life events produce a short-term effect (three to six months on average) and personality produces a long-term effect (at least two years) in the variability of SWB. However, as stated before, recent studies suggest that some Life Events (e.g., death of a spouse) produce permanent changes that have a long-term impact on the SWB of individuals and some authors have defended the view that the set point theory may have to be revised (Headey, 2008). Finally, Feist et al. (1995) tested both *top down* and *bottom up* models of SWB in a structural equation modelling analysis and concluded that both contributed to explain SWB, but that neither was shown to have a significantly better fit than the other.

In the third stage of research on the predictors of SWB there was a trend of integrating several lines of research into holistic models as a way of understanding the dynamic interaction between several factors of SWB. The *integrative* perspective defends that SWB is influenced by multiple variables – the individual's emotional state, past events, the expectations of the future and social comparisons – in a dynamic interaction (Suh, Diener, Oishi, & Triandis, 1998; Schwarz & Strack, 1999). In this stage, the main objectives of studies consist of understanding the psychological processes inherent to the different measures of SWB (Diener & Biswas-Diener, 2000). Several authors have defended the importance of using separate measures of the cognitive, as well as the affective, dimensions of SWB in order to identify different predictors of SWB (Diener, 2000; 2006). Other authors have defended the importance of using separate measures of the positive and negative affective components of SWB because they are independent and yield different relationships with several variables (Diener, 2000; 2006; Fredrickson, 2006). Others yet have defended the importance of analysing several levels of measures of SWB – global and specific – in order to identify SWB's different predictors (Schwarz & Strack, 1999; Sirgy, 2002).

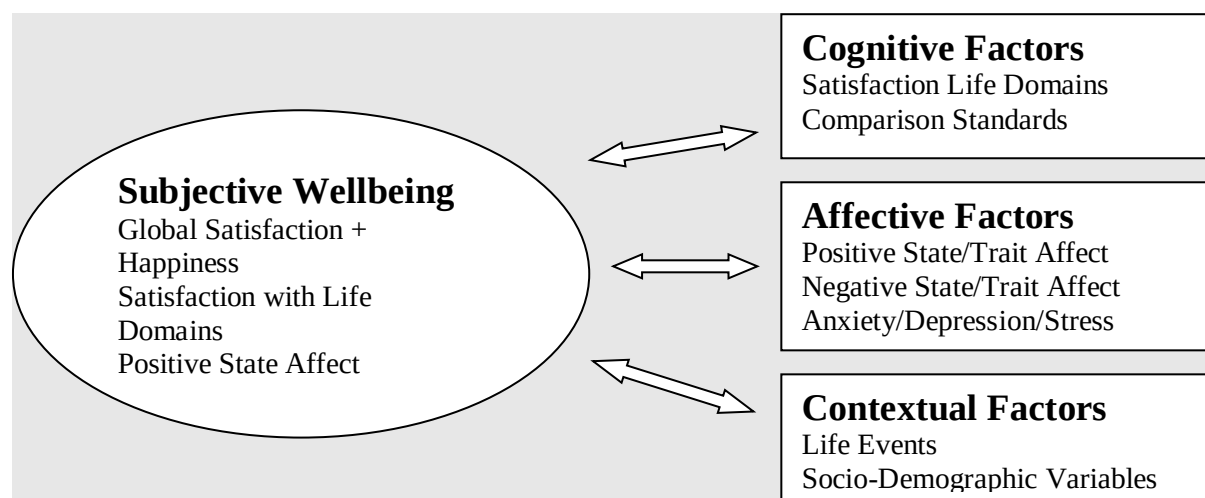
A few empirical studies show that the different components of SWB have different associates (Jones, Rapport, Hanks, Lichtenberg, & Telmet, 2003; Jovanovic, 2011); that the cognitive dimension of SWB is more closely associated with the contextual variables, and that the affective dimension is more closely associated with personality variables (Schimmack, Schupp & Wagner, 2008). Positive and Negative Affect show distinct yet complementary functions. High Negative Affect is associated with the restriction and focus of thoughts and actions; while, Positive Affect is associated with the broadening of thoughts and actions, allowing the building of long-term personal resources and it also optimizes health (Folkman & Moskowitz, 2000; Fredrickson, 2006; Fredrickson & Branigan, 2005).

Empirical studies on the predictors of the different levels of measurement of SWB (global or specific) show that global measures correlate less with contextual factors than with specific measures - such as Satisfaction of Life in Domains (Diener, 1999). Global measures of SWB show more stability over time and specific measures are more diagnostic, providing understanding about the causes of total SWB (Sirgy, 2002; Diener, 2006). Global measures of SWB require the demanding task of considering satisfaction with several aspects of life resumed in one answer. Because this is a complex task, people may choose to answer in a simpler way, based on their affective state at the moment they are answering the questionnaire. Thus, Satisfaction with Life as a Whole would be more influenced by the affective state of the individual, while Satisfaction with Life in Domains reports would be more influenced by intra- and inter-individual comparisons (Schwarz & Strack, 1999).

The results of Diener, Napa-Scollon, Oishi, Dzokoto and Suh (2000), using both specific and global measures of SWB, reflected mainly *bottom up* and *top down* influences, respectively. Examining the factors that are associated with the different levels of measurement of SWB, the authors found that global measures of SWB are more influenced by intrapersonal characteristics, such as individual predisposition. According to Diener and Biswas-Diener (2000), these findings can bring a new understanding of the processes inherent to the variability of SWB. Using several levels of self-reporting measures of SWB simultaneously, we can better understand these processes.

In this study we have three main objectives. The first objective is to analyse the relative contribution of several factors to SWB: intrapersonal (cognitive & affective) and contextual (see Figure 1).

Figure 1: Representation of the relationships between Subjective Wellbeing measures and cognitive, affective and contextual variables



We want to answer the question: which factors contribute above and beyond the other factors to the variability of SWB? We expect that in a conjoint analysis, the intrapersonal factors are the best predictors of SWB. Would the contextual factors show a significant contribution to SWB?

The second objective of the study is to analyse the best predictors of the different measures of SWB – global and specific. We want to answer the question: Do global and specific measures of SWB have different predictors? According to the previous literature, global measures are best predicted by affective factors, while specific measures may reflect actual experiences of individuals and be more diagnostic about the causes of SWB.

The third objective of the study is to analyse the effect of time in the contribution of intrapersonal and contextual factors to SWB. Which variables in the present best predict SWB in the near future? Previous studies indicate that contextual variables lose prediction power over time, while personality variables gain prediction power within a six-month interval. Can we observe the same pattern in a shorter time interval?

2. Method

2.1 Participants

We administered the questionnaires to 303 Portuguese adults (professional trainees 39.2%, university students 60.8%) and repeated the application over a two-month interval. At time II, 245 questionnaires were collected, with a retention rate of 80.9%. The participants were

between 20 and 58 years old; 81.1% were young adults (20 to 40 years old) and 67% were women. In terms of years of education, 25.5% of the participants completed 4 to 9 years of education, 22.5% completed 10 to 12 years, and 42.2% completed 13 to 17 years. The participants in the study volunteered, were not paid, and were informed of the confidentiality and anonymity of their answers in accordance with the ethical standards of the American Psychological Association (APA).

2.2 Materials

2.2.1 Global subjective wellbeing

Global Subjective Wellbeing was measured by Global Happiness and Global Satisfaction single items. We selected the Global Happiness item used by the Gallup Organization of the American Institute for Public Opinion – “In general, how happy would you say you are?” For the Global Satisfaction item, we selected the item used in the Eurobarometer: “On the whole, how satisfied are you with your life?”. We opted for a seven-point scale in order to discriminate minor differences in the levels of Subjective Wellbeing, from: (1) “Extremely Unhappy/Dissatisfied”; to (7) “Extremely Happy/Satisfied” (Andrews & Robinson, 1991). Global Happiness and Global Satisfaction are considered two different measures of Global SWB. Although Happiness and Satisfaction represent, respectively, a more affective or cognitive dimension, in fact, neither of the two are pure markers of each dimension (Andrews & Robinson, 1991). However, the Principal Components Analysis showed that the two items were measuring the same construct; therefore we decided to use the mean of both indicators as a measure of Global SWB (see Table 2). In this study, Global Happiness mean was 5.06 ($SD = .97$) and Global Satisfaction mean was 4.82 ($SD = 1.03$). The two items together yielded a *Chronbach's alpha* of .80. The test-retest correlation of Global SWB over a two-month interval was moderate (.54).

2.2.2 Satisfaction with life in domains

Satisfaction with Life in Domains was measured by the Quality of Life Index (Ferrans & Powers, 1985). The Quality of Life Index is a specific multi-item cognitive measure of SWB that measures the satisfaction and importance of 31 life domains (e.g. family, work, health, financial conditions), using a six-point scale: (1) “Very Dissatisfied” to (6) “Very Satisfied”; (1) “Very Unimportant” to (6) “Very Important”. We used a narrow (at present) time reference. Results reflect the overall quality of life, considering satisfaction and the importance attributed to each life domain in four subscales: health and functioning; family; social and economic; and psychological and spiritual. Previous studies have supported the psychometric qualities of this scale: construct validity (Ferrans & Powers, 1985); convergent validity with other Life Satisfaction Scales (Anderson & Ferrans, 1997); and internal consistency with a Cronbach's alpha between .89 and .95 (Canaval, Gonzalez, Martinez-Schallmoser, Tovar, & Valencia, 2000). In our study, we used the global indicator of quality of life, a variable which is computed by summing all the items of the scale in a total score. The internal consistency of the total scale was .91 (time I) and .93 (time II). The test-retest correlation over a two-month interval was moderate (.65).

2.2.3 Positive and negative state affect

Positive and Negative State Affect was measured by the Positive and Negative Affect Schedule (PANAS) (Watson, Clark, & Tellegen, 1988, Portuguese version from Galinha & Pais-Ribeiro,

2005). The PANAS asks how the individual feels, in the present, regarding ten positive and ten negative specific emotions using a five-point scale, from: (1) "Very slightly or not at all" to (5) "Extremely". The PANAS is one of the most widely used affect scales and was validated in several countries, showing high stability and internal consistency (Watson et al., 1988). However, studies are not consensual about the PANAS' factor-structure and about the relationship between the PA and NA. Some results have indicated a two-factor structure of PANAS (Crawford & Henry, 2004) and others indicated a three-factor structure (Gaudreau, Sanchez & Blondin, 2006). Some results have indicated an independent relationship between PA and NA (Crocker, 1997) and others indicated a correlated relationship (Green & Salovey, 1999). Anyway, the authors of the scale have also found small significant correlations between PA and NA and proposed that PA and NA are tendentially, although not absolutely, independent (Watson et al., 1988). The Portuguese validation revealed good internal consistency with a *Cronbach's alpha* of .86 for Positive Affect, and .89 for Negative Affect, and showed the tendency for independence between the two scales ($r = -.10$, $p = .05$). In the present study, the scale showed good internal consistency with a *Cronbach's alpha* of .87 and .88 for Negative State Affect (time I & time II). *Cronbach's alpha* for Positive state Affect was .82 and .89 (time I and time II). The test-retest correlation over a two-month interval was moderate being .64 for Positive Affect, and .52 for Negative Affect.

2.2.4 Positive and negative trait affect

We also used the PANAS as a Trait Affect measure, with a different time instruction: "Indicate to what extent you generally feel this way, that is, how you feel on average?". The authors of the scale stated that the stability coefficients of the general version of the PANAS are sufficient to be able to use it as a trait affect measure (Watson, et al, 1988; Watson & Clark, 1997). In the present study the scale showed good internal consistency, with a *Cronbach's alpha* of .88 and .91 for Negative Trait Affect (time I & time II), and .82 and .86 for Positive Trait Affect.(time I & time II). The test-retest correlation over a two-month interval for Positive trait Affect (.65) and for Negative trait Affect (.63) was moderate.

2.2.5 Standards of comparison

Standards of Comparison (Telic, Social and Temporal Comparison) was measured by three global items extracted from the Satisfaction and Happiness Questionnaire (SHQ) (Michalos, 1980). The SHQ evaluates the Satisfaction and Standards of Comparison of 12 specific domains of life. The three Standards of Comparison items evaluate the goal-achievement gap (telic comparison), peers' comparison (social comparison), and the previous best comparison (temporal comparison). The items ask, "Considering your life as a whole, how would you evaluate it, comparing it with: a) your goals and ambitions?; b) the average of the people of your age?; c) the best moment of your life in the past?". Answer options are on a five-point scale from (1) "Far below.."; to (5) "Far above .."; with an extra option, (6) "No opinion". The arithmetic mean of these three global comparison items constitutes the Standards of Comparison variable used in this study. We could not find psychometric studies of the Satisfaction and Happiness Questionnaire. In our study this variable showed a weak internal consistency with a *Cronbach's alpha* of .59 (time I) and .68 (time II). The test-retest correlation over a two-month interval was moderate (.56).

2.2.6 Anxiety, depression and stress

Anxiety, Depression and Stress was measured by Escala de Ansiedade, Depressão e Stress – ADS 21 (Pais-Ribeiro, Honrado, & Leal, 2004), the Portuguese version of the Depression Anxiety and Stress Scale - 21 (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 was developed according to the tripartite model of Anxiety and Depression (Clark & Watson, 1991). Each variable is measured using seven items. Respondents are asked, “In what way did each sentence apply to you during the past month”, and used a four-point scale to respond: (0) “Did not apply to me at all” to (3) “Applied to me very much, or most of the time”. The internal consistency (*Cronbach’s alpha*) of the Portuguese version was $\alpha = .85$ for the sub-scale of Depression, $\alpha = .74$ for the sub-scale of Anxiety and $\alpha = .81$ for the sub-scale of Stress (Pais-Ribeiro, et al., 2004). In our study the scale had good internal consistency; between $\alpha = .81$ and $\alpha = .90$ across the three subscales in both data sets. The test-retest correlation over a two-month interval was moderate for Depression (.53), Anxiety (.60) and Stress (.48).

2.2.7 Life events balance

Life Events Balance (i.e. the difference between positive and negative life events) was measured by the Inventory EVE (Ferrerri, Vacher, Tawil, & Alby, 1987). The EVE questionnaire includes a list of 32 events grouped in five categories of life domains: family; professional; social; marital (relationships); and health. Each category of events has an additional item (other); the individual may fill out an item that is not contemplated in the list. The list proposes to evaluate the events that normatively occur in the life cycle of an adult, excluding catastrophic events, daily hassles or events that might be confused with symptoms. The impact of the events is evaluated by the individuals according to their personal vulnerability to the events. In our study we used a different response scale; a four-point scale: (1) “Very positive impact”; to (4) “Very negative impact”. We summed all the events that were considered to have a positive impact into one score, and all the events that were considered to have a negative impact into another score. Then we subtracted the second score from the first and obtained a Balance of the Life Events score. In our study, the mean of the Balance of Life Events was $M = 0$ ($SE = .17$); the maximum negative value was -8 and the maximum positive was 8. The median was $Mdn = 0$ and the mode was 1. The skewness of the distribution was .01, $SE = .14$ and the kurtosis was -.08, $SE = .28$, indicating normality in the distribution of the results.

2.2.8 Socio-demographic variables

A group of socio-demographic variables was included to characterize the individuals in our sample and to identify their objective life circumstances: gender; age; years of education; years of professional training; marital status; employment status; nationality; household income; household members; leisure time; and religious activities time. We also assessed health status by questioning individuals about chronic diseases diagnosed, physical impairment and health perception.

2.3 Procedure

With the institutions’ and the teachers’ permission, we approached participants in classrooms at the end of lessons. We invited the students to participate in a study about peoples’ emotions. The students who volunteered answered the questionnaires in the classroom. The researcher was present to answer any questions and supplied an e-mail address for further contact. In order to match the questionnaires from time I and time II, we requested participants write a

password on a separate sheet. Time II data collection was carried out two months later, at which point participants answered questionnaires that were matched to the previous ones through the passwords they supplied.

3. Results

3.1 Preliminary analysis

We began our data analysis by performing a principal components analysis (PCA), with Direct Oblimin rotation because it is expected that the factors are correlated. We did not define a number of components to extract but retained all factors whose eigenvalues were superior to 1. Results separated three components: a) one negative affective (including Negative State and Negative Trait Affect, Anxiety, Stress and Depression); b) one positive affective (including Positive State and Positive Trait Affect); and c) one cognitive (including Global Satisfaction with life, Global Happiness, Satisfaction with Life in Domains, and Social Comparison). Results indicated good main and secondary loadings, indicating good convergent and discriminant validity between the variables in the study; see Table 2.

Table 2: Principal components analysis with direct oblimin rotation of the cognitive and affective measures of the study

	Components		
	1	2	3
Global Happiness (a)	.02	.82	.07
Global Satisfaction (c)	-.04	.86	.06
Satisfaction with Life in Domains (c)	-.18	.69	-.13
State Positive Affect (a)	.05	.06	-.87
State Negative Affect (a)	.74	-.21	-.16
Trait Positive Affect (a)	-.05	-.03	-.90
Trait Negative Affect (a)	.68	-.14	.02
Standards of Comparison (c)	.07	.70	-.14
Depression (a)	.68	-.20	.21
Anxiety (a)	.93	.18	.02
Stress (a)	.91	.09	-.01

Note: (a) affective measures; (c) cognitive measures. Factor loadings >.40 are in boldface.

The Keiser-Meyer-Olkin test yielded a .82 value, indicating that the partial correlations among variables are strong enough to provide an adequate PCA. The Bartlett's Test of Sphericity yielded a $\chi^2_{255}=1210.18$ $p < .0001$, indicating that the correlation matrix is not an identity matrix and that the factor model is appropriate.

In the next step we performed a correlation analysis between the variables in the study and obtained low to moderate correlations, indicating discriminant validity and avoiding the problem of multicollinearity. The highest correlation found was .61, not surprisingly between State Affect and Trait Affect variables. The Socio-Demographic variables were subjected to dummy variable coding as described by Tabachnick and Fidel (2001).

3.1.1 Predictors of SWB

We performed a regression analysis using the stepwise method. Each of the SWB variables in the study was introduced as a dependent variable (Global Subjective Wellbeing; Satisfaction with Life in Domains; Positive State Affect; Negative State Affect). As independent variables, we introduced intrapersonal cognitive variables (such as Satisfaction with Life in Domains, Standards of Comparison), intrapersonal affective variables (such as Positive and Negative State Affect, Positive and Negative Trait Affect, Depression, Anxiety, Stress) and contextual variables (such as Life Events Balance, Socio-Demographic variables).

The predictors of Global SWB were Satisfaction with Life in Domains, Negative State Affect and Positive State Affect, explaining 34% of Global SWB variance (Table 3). Thus, the predictors of Global SWB were intrapersonal factors (cognitive & affective). Excluded were all contextual factors, affective trait and mood variables.

Table 3: Regression analysis (stepwise) for the predictors of global subjective wellbeing

	Model 3 B^I	$SE\ B$	95% CI
Constant	2.96***	.48	[2.01, 3.91]
Satisfaction With Life in Domains	.10***	.02	[-.06, .13]
Negative State Affect	-.31**	.12	[-.54, -.08]
Positive State Affect	.17*	.09	[-.01, .34]
R^2	.35		
F	25.24***		
ΔR^2	.34		

Note. CI = confidence interval. * $p < .05$. ** $p < .01$. *** $p < .001$. ^IBeta unstandardized coefficients of the last stepwise model of variables entered in the regression.

The predictors of Satisfaction with Life in Domains – a cognitive and specific measure of SWB – were Depression, Standards of Comparison, Life Events Balance, Positive State Affect, Socio-Demographic variables (gender - being a man; income - reporting higher levels; education - reporting fewer years of education; living with children - reporting living with fewer children; health perception - reporting not being ill) and Negative Trait Affect, explaining 58% of SWB variance (Table 4). Thus, the predictors of the cognitive and specific measure of SWB were intrapersonal factors (affective & cognitive) and contextual factors (life events & life circumstances).

Table 4: Regression analysis (stepwise) for the predictors of satisfaction with life in domains

	Model 10 B	SE B	95% CI
Constant	17.40***	1.95	[13.54, 21.27]
Depression	-1.90***	.47	[-2.83, -.97]
Standards of Comparison	1.03***	.27	[.48, 1.58]
Life Events Balance	.20**	.07	[.05, .35]
Positive State Affect	.96**	.30	[.35, 1.56]
Health Perception	2.55**	.88	[.80, 4.28]
Gender	-1.29**	.41	[-2.09, -.47]
Income	.58**	.16	[.25, .90]
Years of Education	-.21**	.05	[-.32, -.08]
Negative Trait Affect	-.99*	.39	[-1.75, -.21]
Nr Children live with	-.61*	.26	[-1.12, -.09]
R ²	.61		
F	21.05***		
ΔR ²	.58		

Note. Dummy Variable Coding: Sex - 0 Female; 1 Male; Health Perception - 0 Ill; 1 Not ill. CI = confidence interval. * $p < .05$. ** $p < .01$. *** $p < .001$. ¹Beta unstandardized coefficients of the last stepwise model, of variables entered in the regression.

The predictors of the Positive State Affect – an affective and specific measure of SWB – were the Positive Trait Affect, one Socio-Demographic variable (educational status - being at university predicts lower Positive Affect than being in professional training) and Negative Trait Affect, explaining 42% of its variance (Table 5). The predictors of Positive Affect were intrapersonal affective factors and one contextual factor. Excluded were other contextual variables, cognitive, state affective and mood variables.

Table 5: Regression analysis (stepwise) for the predictors of positive state affect

	Model 3 B	SE B	95% CI
Constant	-.25	.48	[-1.19, .69]
Positive Trait Affect	1.02***	.11	[.80, 1.25]
Education Status	-.24**	.09	[-.42, -.07]
Negative Trait Affect	-.19*	.08	[-.35, -.04]
R ²	.43		
F	35.60***		
ΔR ²	.42		

Note. Dummy Variable Coding: Education Status - 0 Professional Trainee; 1 University Student. CI = confidence interval. * $p < .05$. ** $p < .01$. *** $p < .001$. ¹Beta unstandardized coefficients of the last stepwise model, of variables entered in the regression.

Negative State Affect – an affective and specific measure of SWB – was predicted by Depression, Negative Trait Affect, Anxiety, Positive State Affect and Satisfaction with Life in Domains, explaining 45% of its variance (Table 6). The predictors of Negative Affect were exclusively intrapersonal factors: affective and cognitive.

Table 6: Regression analysis (stepwise) for the predictors of Negative State Affect

	Model 5 B	SE B	95% CI
Constant	.86*	.34	[.18, 1.54]
Depression	.26**	.09	[.07, .45]
Negative Trait Affect	.25***	.07	[.12, .38]
Anxiety	.28**	.09	[.10, .46]
Positive State Affect	.12*	.05	[.02, .22]
Satisfaction with Life in Domains	-.02*	.01	[-.05, -.00]
R^2	.47		
F	24.59***		
ΔR^2	.45		

Note. CI = confidence interval. * $p < .05$. ** $p < .01$. *** $p < .001$. * $p < .05$. ** $p < .01$. *** $p < .001$. ¹ Beta unstandardized coefficients of the last stepwise model, of variables entered in the regression.

Results suggest that SWB was mainly predicted by intrapersonal factors. Among the intrapersonal factors, the affective factors were the most important in predicting SWB: mood (particularly Depression); affective trait and affective state variables. However, contextual factors also significantly contribute to SWB, beyond the intrapersonal factors.

3.1.2 Predictors of global or specific measures of SWB

The main difference between the global and specific measures of SWB was that the global measure was firstly predicted by a cognitive factor while the specific measures were all firstly predicted by affective factors. Furthermore, specific measures were predicted by contextual factors, particularly the cognitive dimension, while the global measure was not predicted by contextual factors.

3.1.3 Predictors of SWB over a two-month interval

In order to identify which variables in the present are predictors of SWB two months later, a regression analysis was performed using the stepwise method. We introduced the cognitive, affective and contextual variables measured in time I as independent variables, and the four SWB variables, and the four SWB variables measured in time II as dependent variables.

Results indicated that the variables in time I that predicted Global SWB over a two-month interval were Satisfaction with Life in Domains, Standards of Comparison, and Negative Trait Affect, explaining 39% of its variance (Table 7).

Table 7: Regression analysis (stepwise) predicting global subjective wellbeing over a two-month interval

	Model 3 <i>B</i>	<i>SE B</i>	95% CI
Constant	3.37***	.51	[2.36, 4.39]
Satisfaction with Life in Domains	.06**	.02	[.02, .10]
Standards of Comparison	.28***	.07	[.14, .43]
Negative Trait Affect	-.27*	.10	[-.47, -.06]
R^2	.41		
F	25.71***		
ΔR^2	.39		

Note. CI = confidence interval. * $p < .05$. ** $p < .01$. *** $p < .001$. [†] $p < .05$. ** $p < .01$. *** $p < .001$. [†] Beta unstandardized coefficients of the last stepwise model, of variables entered in the regression.

The variables at time I that predicted Satisfaction with Life in Domains two months later were Depression, Standards of Comparison, Negative Trait Affect, health perception (the fact that the individual reports not feeling ill at the time), and nationality (being Portuguese instead of foreigner), explaining 38% of its variance (Table 8).

Table 8: Regression analysis (stepwise) predicting satisfaction with life in domains over a two-month interval

	Model 5 <i>B</i>	<i>SE B</i>	95% CI
Constant	17.07***	2.42	[12.26, 21.87]
Depression	-1.54*	.68	[-2.90, -.19]
Standards of Comparison	1.09**	.35	[.39, 1.79]
Negative Trait Affect	-1.80***	.50	[-2.78, -.81]
Health Perception	2.80*	1.19	[.44, 5.16]
Nationality	3.32*	1.43	[.50, 6.15]
R^2	.41		
F	15.57***		
ΔR^2	.39		

Note. Dummy Variable Coding: Nationality – 0 Foreigner; Portuguese; *Health Perception* – 0 Ill; 1 Not ill. * $p < .05$. ** $p < .01$. *** $p < .001$. [†] Beta unstandardized coefficients of the last stepwise model, of variables entered in the regression.

The predictors of the Positive State Affect, two months later, were Positive Trait Affect, Satisfaction with Life in Domains, and one Socio-Demographic variable (employment status: being unemployed was a predictor of lower Positive Affect), explaining 32% of its variance (Table 9).

Table 9: Regression analysis (stepwise) predicting positive state affect over a two-month interval

	Model 3 B	SE B	95% CI
Constant	-1.07	.57	[-2.20, .06]
Positive Trait Affect	.85***	.15	[.55, 1.15]
Satisfaction with Life in Domains	.06**	.02	[.02, .09]
Employment Status	-.29*	.13	[-.54, -.02]
R^2	.35		
F	19.91***		
ΔR^2	.33		

Note. Dummy Variable Coding: Employment Status – 0 Unemployed; 1 Employed. * $p < .05$. ** $p < .01$. *** $p < .001$. ¹Beta unstandardized coefficients of the last stepwise model, of variables entered in the regression.

Depression was the only predictor of Negative State Affect over a two-month interval (Model 1 $B=.49$, $SEB = .12$; $R^2 = .12$; $\Delta R^2 = .12$; $F= 16.08$; $p<.0001$), ICs [.25, .73], explaining 11% of the variance.

We observed that the first predictor of each SWB variable at time I was the same at time II (e.g. Satisfaction with Life in Domains was the first predictor of Global SWB at time I and at time II). However, among the secondary predictors we observed differences. Mood and affective trait variables showed higher predictive power of SWB over a two-month interval. The affective state variables were no longer among the predictors of SWB, and the contextual factors lost their prediction power, even more so, over a two-month interval.

4. Discussion

4.1 The main predictors of SWB

Our first objective was to identify the main predictors of SWB. To that end, we analysed the conjoint contribution of intrapersonal factors (cognitive & affective variables), and contextual factors (Life Events Balance & socio-demographic variables) in order to explain several components of SWB. The predictors of Global SWB were exclusively intrapersonal factors: Satisfaction with Life in Domains, Negative State Affect and Positive State Affect. Contextual variables and other affective variables, such as mood and trait affect, were not significant predictors of Global SWB. This result supports previous research which places intrapersonal factors among the main predictors of SWB.

Concerning the cognitive dimension of SWB, Depression was its first predictor, followed by Comparison Standards. Other researchers have found equivalent results, concluding that Satisfaction with Life: a) involves a cognitive process but also an affective process (Veenhoven, 1996); b) that it is a function of the comparison between life achievements and the personal standards of the individual (Schwarz & Strack, 1999); and c) that it is promoted by the individuals mainly to prevent Depression (Sirgy, 2002). Among the predictors of this dimension of SWB, we observed mood, cognitive variables, affective state and trait variables and a significant contribution of several contextual variables. This measure of SWB showed more contextual influences than any other measure, confirming previous results that contextual variables are associated more with Satisfaction with Life when measured in Domains rather than through global measures (Diener, 1999; Schimmack, Schupp & Wagner, 2008; Sirgy, 2002).

We agree that several components of SWB correlate in different ways with contextual variables (Schwarz & Strack, 1999).

Concerning the *affective dimensions of SWB*, results showed a main association with affective trait and mood variables. The contribution of affective trait factors to the affective dimension of SWB is not surprising, since, in our study, state and trait affect were measured with the same instrument (PANAS), using a different temporal frame (Watson et al., 1988). However, we also observed the contribution of Depression, a mood factor, in predicting Negative State Affect. Several previous studies showed the important contribution of Depression to SWB variables (Cummins, Gullone & Lau, 2002; Diener & Seligman, 2002), strongly suggesting that SWB is an indicator of the absence of Depression. In our results, Depression was also the first predictor of the cognitive dimension of SWB, constituting one of the main predictors of the SWB variables in our study. Only one contextual variable was predictive of Positive State Affect and none was predictive of Negative State Affect.

Regarding the theoretical models of SWB, a broad examination of our results indicates that the main predictors of SWB were intrapersonal (cognitive and affective). As expected, the contextual factors were not the best predictors of SWB. The results support the *top down* theoretical models of SWB (Brief et al., 1993). However, the results also showed that the contextual variables significantly predicted SWB, particularly its cognitive dimension. Therefore, we cannot state that one of the models is better. Feist et al. (1995) also tested the *bottom up* and *top down* models and concluded that neither was better than the other.

To discuss the contribution of the contextual variables to SWB we must consider the characteristics of our sample. The sample in our study, as samples in most studies of SWB, has a medium socio-economic status, and is thus unlikely to experience deficits in basic human needs. As discussed in previous research (Inglehart & Klingemann, 2000; Veenhoven, 1996), these samples are not adequate to show the impact of the contextual variables on SWB. Contextual variables became very important to the SWB of individuals when basic needs are not fulfilled (Veenhoven, 1996). Considering these elements, we cannot state that contextual variables are not important predictors of SWB. We argue that our results preferably support the *integrative* theoretical model of SWB, because all orders of factors - cognitive, affective and contextual -, significantly contribute to SWB, supporting the multidimensionality of predictors, as argued by McCullough, Huebner, and Laughlin (2000). Furthermore, the *integrative* model presupposes that the contribution of the predictors to SWB is dynamic, depending on other factors such as the characteristics of the sample, the variables being assessed, and the time frame used.

4.2 The predictors of global and specific measures of SWB

Considering global SWB, measured by Global Happiness and Global Satisfaction, we expected that it would be firstly predicted by affective state or trait factors. According to Schwarz and Strack (1999), Global SWB measures are complex because they ask of the individual the task of evaluating every life domain and combine it in a global answer. Confronted with that demanding task, global measures of SWB may not reflect a systematic and accurate evaluation of all aspects of life. Rather, people may respond in accordance with their affective state in the moment of the assessment. In turn, specific measures are probably more influenced by intra and inter comparison processes, since they supply the information to be compared (e.g. specific life domains) as well as the evaluation criteria (e.g. response options). Results obtained by Diener et al. (2000) also showed that global measures of SWB tend to be predicted by broad

indicators and positive predisposition factors, while specific measures may reflect actual experiences and be more diagnostic on the causes of global SWB.

Our results only partially support previous research. In fact, the specific measures were more accurately predicted by the actual experiences of the individuals (such as Life Events and Socio-Demographic variables), while Global SWB was not predicted by contextual variables. This result supports previous findings that global measures reflect more *top down* influences while specific measures of SWB reflect more *bottom up* influences. Our results also show that Comparison Standards were a significant predictor of the specific measure of SWB, supporting the hypothesis that specific measures are more influenced by intra and inter comparison processes, and are more diagnostic, providing information about the causes of SWB (Diener et al., 2000; Schwarz & Strack, 1999).

However, our results do not support the hypothesis that global SWB is mainly influenced by the affective state and trait of the individuals. The affective variables did not prove to be the best predictors of the global SWB. In fact, Global SWB first predictor was a cognitive variable (Satisfaction with Life in Domains). We should note that the Global SWB questions were placed at the beginning of the questionnaire, so that the Satisfaction with Life in Domain questions would not influence the global answers. The differences between our results and the ones from Diener et al. (2000) may be explained by the different measures used in both studies. As global measures of SWB, Diener et al. (2000) employed three life satisfaction domains (e.g. education, recreation, and oneself), similar to the ones we used as specific measures. As global measures, we used Global Life Satisfaction and Global Happiness. As specific measures, Diener et al. (2000) used specific aspects of each life domain (e.g., satisfaction with books & with teachers), while we used 31 life satisfaction domains (e.g., education, recreation, oneself, income). We conclude that further study may be useful to understand the different dynamics of answering questions regarding global and specific measures of SWB.

4.3 Predictors of SWB over a two-month interval

An important result of our study relates to the effect of time in the prediction power of several factors in the SWB of individuals. We observe differences from the predictors of Global SWB between time I and time II of data collection. The predictors of Global SWB measured in time II were Satisfaction with Life in Domains, Comparison Standards and Negative Trait Affect. Over a two-month interval the affective state variables were no longer predictors of SWB and the cognitive and affective trait variables became more predictive of SWB in the future.

The first predictor of Satisfaction with Life in time II, as in time I, was Depression. However, state affective variables were no longer predictors of Satisfaction with Life in time II, trait affective variables maintained their predictive power and the contextual variables showed less predictive power. Results support the idea that contextual factors have a short-term effect, while trait variables have a long-term effect in SWB, as argued previously (Headey & Wearing, 1992; Suh, Diener & Fujita, 1996).

The predictors of Positive and Negative Affect at time II were mood and trait affective variables, although Satisfaction with Life in domains and employment were also predictors. Employment is, in fact, one of the contextual variables that shows a consistent and long-term association with SWB (Lucas, et al., 2004).

Concluding our discussion of the predictors of SWB over a two-month interval, we observed that affective state variables and contextual variables lost predictive power and that affective trait variables increased their predictive power. These results stress the importance of

analysing the predictors of SWB in different moments in time, because the factors that predict SWB in the present may not be relevant to predict SWB in the future.

One of the limitations of our study was the use of two instruments that were not previously validated in the Portuguese language, specifically, the measures of Satisfaction with Life in Domains and Social Comparison. At the time it was not possible to find parsimonious instruments validated in the Portuguese language to measure the above constructs; available instruments were too long for use in a global questionnaire such as this one. Therefore we opted for more parsimonious instruments, although not validated. Yet, as reported, the psychometric qualities of these instruments yielded adequate values of internal consistency, reliability and convergent and discriminant validity; except for a rather low Chronbach Alpha of the Social Comparison variable. Another limitation of the study is related to the gender and age bias of our sample, constituted mostly of women and young adults. Furthermore, we only sampled a two month interval period; results may not be generalized for longer periods of time.

Concluding our results, the intrapersonal factors (cognitive & affective) were the main predictors of SWB, particularly the affective, Depression, State and Trait Affect. Contextual variables such as Life Events Balance and socio-demographic variables also showed significant prediction of SWB, particularly of the cognitive dimension. The different dimensions and levels of measurement of SWB showed different predictors, indicating that they are distinct and that the findings for one may not generalize to the others (Diener, 2000; 2006; Schimmack, Schupp, & Wagner, 2008). For further study it would be important to include measures of the three dimensions of the concept: Satisfaction with Life, Positive Affect and Negative Affect. However, if that proves not possible, then it would be essential to clearly report which measures of SWB were used, and to what dimension the results refer.

Finally, our results also showed that time has an effect in the predictors of SWB. Even in a short temporal interval of two months, contextual and state affect variables lost predictive power, while trait affect variables gained predictive power. Considering our results, we agree with the *integrative* perspective which emphasises the contribution of multiple factors to SWB in a dynamic interaction. This means that depending on the characteristics of the samples, of the measures used and of the time frame in which measurement occurs, the contribution of each factor to SWB can change. Further study should continue to explore the relationships between these factors.

We consider these results important in understanding the processes and dynamics of SWB. By understanding the relationship between different predictors, different measures and the time variable, it is possible to better intervene and to more reasonably anticipate the results of intervention programs over time.

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Authors

Iolanda Costa Galinha
Universidade Autónoma de Lisboa
iolandag@yahoo.com

José Luís Pais Ribeiro
Universidade do Porto.

jlpr@netcabo.pt

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CAROLINA MERCEDES DAZA MONTALVO
CC: 66.783.790
Pago PSE No: 1109650
CUS: 1492026665

Patente PCT
MEJORAMIENTOS EN O RELACIONADOS CON COMPUESTOS ORGÁNICOS

Detalle del pago

Id.	Rentístico	Concepto y Servicio	Cant.	Val. Unit.	Subtotal
1	50005-01-03	Modificaciones / Correcciones al registro Patente PCT (DESCUENTO INTERNET)	1	\$ 225,000	\$ 225,000
2	50005-01-01	Solicitud examen de patentabilidad Patente PCT (DESCUENTO INTERNET)	1	\$ 1,522,000	\$ 1,522,000
TOTAL					\$ 1,747,000